AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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SOUTHDOWN-HAMPSHIRE FIRST PRIZE LAMBS.

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CROSS-BRED LAMBS.

ONE of the lessons of the last annual show of the Smithfield club of London, England, was the value of judicious cross-breeding for special purposes. Some of the largest and best animals exhibited in both cattle and sheep classes were cross-bred, the object sought being weight and quality of carcass. The last one of these shows—at all times a notable event in the livestock world—was very large and good. This was especially true of sheep, no less than twelve different pure breeds being largely represented, besides many pens of cross-bred sheep and lambs. Among the latter were two pens of lambs exhibited by James Toop, which were a genuine triumph. One of the pens of three lambs was awarded the first prize and the breed cup, while the second pen won the second prize and was "reserve" for the cup. The cross was Southdown on Hampshire. The first prize lambs, which are represented in the illustration on the preceding page, were, when exhibited, 314 days old, and weighed 202 pounds each, on an average. They were as remarkable for fine quality as for great weight, averaging eight pounds heavier than the pen of Oxfordshire-Hampshire lambs which took the third prize.

It is well known that the modern "Down" breeds—that is, the Shropshires, Oxfordshires, Hampshires, and Suffolks—were formed by crossing the Southdowns on various old breeds, now mostly extinct. The Southdown breed is thus the fountain from which the other "Down" blood was drawn. A cross of Southdown on any of the other established "Downs" is therefore a natural and logical one, and certainly proved eminently successful in the instance under consideration.

THE DRIFT OF DAIRY PROGRESS.

JOHN GOULD, OHIO.

Now and then one finds an assertion to the effect that silage as a food for dairy cows, is being fast relegated to the background and will soon drop out of sight as a discarded "fad." Last year the Wisconsin experiment station sent out a circular letter to one hundred of the most noted dairymen, East and West, to ascertain what foods and how much was being fed, what the breed of cows, what the yield of milk, and its percentage of fat. In a recently issued bulletin, reports are given of these dairies, and, the ration of course, attracts the first attention. Sixty-four of them do not feed what may be called a full silage ration, from thirty-five to fifty pounds daily to a cow, and these among the most noted dairies in the country. The other notion that silage makes thin milk, is as quickly dispelled by the fact that the silage milk is more than a full average in percentage of fat, which can only be argued away by assuming that the cows eating the silage were naturally the richest milkers. As these dairies are owned in all sections, from Boston to the Pacific, it cannot be assumed that silage feeding is a sectional matter, for where one finds dairies, there silos are to be found, to a greater or less extent, but always a growing practice.

One of the notable things about this report, is the growing practice which makes apparent the accepted idea of the great value of the corn plant as a part ration for milch cows; in the list, corn fodder appears thirty-five times, and corn meal, in some proportion of the grain ration, forty-two times. While this is conspicuous, the most significant part of the report is that these wide apart farmers are giving their cows rations, which in digestable food nutrients and food elements are remarkably uniform, and of wider ratio than the German standard. The German standard is as 1 to 5.4, while these farmers have, without concerted action, struck an average of 1 to 6.9, and the uniform good results from these dairies seem to carry the conviction that the self-adjusted American ration supplies the need of the milch cow quite as well as a narrower one. If not considered a digression, it might be interesting to the reader to know that these one hundred dairies are, while of all breeds or no breeds, pretty nearly, in amount of milk and content of fat, stand on an equality, that of a yearly yield of slightly above 6,000 pounds per cow, and approximately four and a half per cent. of butter fat, only a few dairies went above 7,000 pounds of milk to the cow, mostly approximating the first named figures. This goes to show that the best dairymen are not milking dairies with either phenomenal milk or butter records, but cows that are giving fair and persistent yields. The statements accompanying the report are to the effect that these cows are milking, as a rule, nine and ten months of the year. The lesson is that the silo has a firm and increasing hold upon the dairy farmer, and that with a good silo filled with well-matured corn he can with safety widen out the nutritive ratio with the great cheap corn crop and cheapen the ration correspondingly, and at the same time hold the cows up to full yields of rich milk, and thus make the dairy pay better, a thing that lies now at the foundation of dairy prosperity.

BUYING A FARM.

E. R. FLINT.

In selecting a farm, especially if the owner intends to reside upon it, there are many things to be considered aside from its actual commercial value. Whether he intends to live upon it or not, he should take into consideration not only the quality of the soil and its adaptability to the proposed purposes, but also its nearness to market, the state of the roads over which his produce will have to be drawn, perhaps in early spring or late fall, the condition of the fences, buildings and the natural drainage. All these go far toward making a desirable or undesirable purchase, for a farm is a piece of property of which one cannot dispose whenever he may choose. Once bought, it is much more easily sold again if it is a desirable piece of land. In addition to these, if the farm is to be the purchaser's residence, he will take into consideration its distance from school and church privileges. For a family of small children, it is very desirable to have the schoolhouse within a mile at most. This feature alone would be worth hundreds of dollars in the value of a farm to some buyers. Muddy roads and bad weather are unavoidable for a portion of the year, and convenience to the schoolhouse is very desirable.

While the dwelling house and other buildings are important matters in a farm home, do not forget that a dooryard shaded with trees cannot be supplied to order as they can. Be sure that at least a few trees are ready to furnish the ever welcome shade about the house in summer. However carefully planted and tended, they will require years of growth before they afford much shade. A farmhouse with shade trees of good growth in the front yard is a more desirable residence than one left to the scorching rays of a summer sun. It is a common saying that one can buy a farm with suitable buildings on it cheaper than the land could be bought, and the buildings added. This may be true, but remember no money can give shade trees within a year or two. It is much pleasanter to have a porous soil in the dooryard than one which holds water like a sponge. A good orchard is worth a great deal to a farm. As with shade trees, they may be set out, but it takes ten years at least for an apple tree to attain bearing age. No one can afford to wait ten years for apples. It is better to buy a farm with even a few apple trees than without any.

A farm on which there is no waste land is to be preferred to one of which a portion is untillable. River flats or low borders of any smaller stream are usually wet and fit only for pasture. Marsh grass and rushes are the best of their productions, and the pasturage even is not equal, acre for acre, to good upland. Such a stream is excellent in time of drouth to supply water for the stock, but it makes a good deal of waste land which might better be under cultivation. A swamp or swale may be cleared up, if there is an outlet for drainage, and often makes the choicest land when so treated. A beautiful farm home is within the reach of many a family who think that because they have not plenty of money to spend in beautifying it, they cannot have it. Fixing up and keeping everything tidy about the place, fences in good repair and free from bushes, shade trees scattered about, a well-kept lawn, barns in good repair, whether they are expensive or not, all these cost nothing but a little time, and add more to a farm home than most owners realize. One who rides about the country, where he is unacquainted, can judge pretty closely of the ability of the farmers by the appearance of their farms. If one wants to sell, the more attractive his farm is the more readily can a buyer be found. In buying a farm, as in buying anything else, the best may be the cheapest in the end. A few dollars more on an acre may put the purchaser in possession

of a farm more desirable in every way. In that case, the best is certainly the cheapest. No one ought to buy a farm that is to be his home without giving the matter sufficient thought and personal observation of all its various conditions.

COMMERCIAL FERTILIZERS.

S. M. HARRIS, NEW YORK.

When it is considered that millions of dollars are paid annually by the farmers and gardeners of the country for fertilizers, it is astonishing what little interest is taken by the consumers in the real values of the material they buy. If one dealer charges $35 per ton for a "phosphate" and another charges $25, it is usually considered that the one costing $25 is the most economical to buy. Some farmers, however, think that because the one costs $10 more than the other that it must be better. The fact is that neither of these suppositions is necessarily correct. In order to arrive at a correct idea of the value of a fertilizer, an intelligent study of its contents, as shown by the analysis, must be made. To do this we must consider for what purpose we buy fertilizers. It will naturally be said: To make crops grow. But why do they make crops grow? An intelligent man would reply: Because they furnish the elements of plant food of which the soil does not contain a sufficient supply.

It has been found that many soils are deficient in nitrogen and phosphoric acid, and often in potash. Therefore, we buy fertilizers to furnish these elements. When buying fertilizers we should consider how to get the largest amount of phosphoric acid, nitrogen and potash in the most available form for our money.

The manufacturers usually print on the bag containing their fertilizers a statement as to the amount of ammonia (nitrogen), phosphoric acid and potash the fertilizer contains. These statements are usually correct, as there is a heavy fine for making false statements. It is therefore easy to judge what a certain fertilizer is worth. Take, for instance, a fertilizer whose analysis is as follows, which is about the average: Ammonia (NH_3), two to three per cent.: phosphoric acid (P_2O_5) soluble, eight to ten per cent.; potash (K_2O), three to four per cent. The lowest figures are the only ones that can be depended upon. In the case of ammonia the amount must be reduced to the nitrogen it contains, as nitrogen is what we want and not ammonia, which is a compound of hydrogen and nitrogen in the proportion, by weight, of three parts of the former to fourteen of the latter. Therefore, two per cent. of ammonia is only equal to 1.65 per cent. of nitrogen. The amount should always be expressed as nitrogen, but as it sounds larger as ammonia the manufacturers usually express it in that way. A ton of fertilizer analyzing as above would contain: 33 pounds nitrogen, 160 pounds phosphoric acid, and 60 pounds potash.

To get at the value of each of these fertilizer ingredients, we must consider what we can buy them for in other forms equally as good. We can buy nitrogen in nitrate of soda at fifteen cents per pound; phosphoric acid in plain superphosphate or bone meal for five cents per pound; potash in muriate of potash costs four and one-half cents per pound. Applying these values to the amount of plant food contained in the fertilizer whose value we are estimating, we have the following result:

33 pounds nitrogen at 15 cents per pound	$4.95
160 pounds phosphoric acid at five cents per pound	8.00
60 pounds potash at four and a half cents per pound	2.70
Total value per ton	$15.65

Such a fertilizer ordinarily sells at from $25 to $30 per ton, or from $9.35 to $14.35 more than it is really worth, as the mixing costs but little.

It is evident, I think, that more attention should be paid to the contents of the fertilizers we buy. Because a certain brand of fertilizer happened to produce good results it does not follow that it is the cheaper and most economical way we can furnish food to our crops. It is very probable that we could obtain the same amount of plant food and get just as good results at far less cost by buying our fertilizing materials unmixed.

The cheapest form in which to buy fertilizers is an important question, and one concerning which the intelligent farmer should keep himself well informed. Of materials furnishing phosphoric acid, South Carolina and Florida rock phosphate and bones are the most largely used. The rock phosphate contains about sixty per cent. of phosphate of lime, which is about the same as is contained in bones. When this rock is ground fine and treated with sulphuric acid it resolves itself into two substances, one of which is a soluble phosphate of lime called superphosphate; the other is sulphate of lime, that is, gypsum or land plaster. These two substances cannot well be separated, so they are sold together under the name of superphosphate. This usually contains fourteen per cent. of soluble phosphoric acid, and can be bought for from $15 to $18 per ton, making the phosphoric acid cost from five to six and a half cents per pound.

Ground bone or bone meal usually contains about twenty-three per cent. of phosphoric acid in an insoluble condition. It also contains about four per cent. of nitrogen, also insoluble. Both the phosphoric acid and nitrogen become available as plant food by chemical action in the soil. The rapidity with which these changes take place largely depends upon the fineness of the bone meal. Finely-ground bones will become available much more rapidly than coarser ground bone. Calling the phosphoric acid in the fine bone meal worth four and a half cents per pound, and the nitrogen worth fifteen cents per pound, bone meal is worth $32.70 per ton.

Another source of phosphoric acid is a phosphate of lime produced as a by-product in the manufacture of steel. It is called by various names, among which "Thomas slag" and "odorless phosphate" are the most common. This phosphate contains about twenty per cent. of phosphoric acid in a condition that is insoluble in water, but when ground very fine, soon becomes available to the plants. This is particularly true on low or mucky ground. It is claimed that phosphoric acid in this form is more easily taken up by the plants than in the form in which it occurs in bones. Calling the phosphoric acid in this phosphate worth four and a half cents per pound, its value is $18.00 per ton.

The principal sources of nitrogen are nitrate of soda, sulphate of ammonia, dried blood, tankage and yard manure. Nitrate of soda contains about sixteen per cent. of nitrogen, or from 310 to 320 pounds per ton; as a ton of nitrate of soda can be bought for $46 or $47, nitrogen in this form costs fifteen cents per pound. Sulphate of ammonia contains about twenty per cent., or 400 pounds per ton. It costs $70 per ton, which makes nitrogen in this form cost seventeen and a half cents per pound. The amount of nitrogen in dried blood is somewhat variable, ten per cent. being, I think, about the average. The prices are also variable. If it contains ten per cent. of nitrogen, there would be 200 pounds per ton, which, at fifteen cents per pound, would make the blood worth $30.00 per ton. Potash can be bought in the form of muriate of potash, which contains fifty per cent. actual potash, for about four and a half cents per pound. In the form of "high grade" sulphate of potash, it costs five and a half cents per pound.

HARVESTING BEANS.

WM. J. THOMAS, MICHIGAN.

Until quite recently the bean crop was harvested by hand, generally pulled by boys at the rate of five cents per row of forty rods. This was the most trying time of all for the bean grower, as so many beans were raised that it was difficult to obtain the necessary help. Unless pulled at the right time the beans shelled badly, and, as boys are apt to be careless, the loss from shelling was sometimes considerable. There appeared to be no help for it, but at last American ingenuity came to the front and the bean puller became a reality, and is to the bean raiser what the self-binder is to the wheat grower. Now the crop can be left until thoroughly ripe, and pulled and hauled immediately without fear of rain or shelling. The machine generally in use here is the Common-sense puller, with which one man and team can easily pull ten acres a day. Two rows are pulled at once and thrown together in a row. Two of these windrows are then thrown together in bunches, and hauled to the barn.

The draught on the planter and harvester is very light. The cost of harvesting by machinery does not exceed fifty cents per acre, while by hand it was about one dollar and a half. The puller leaves the ground cut up loose, and saves one harrowing for wheat or rye. If the beans when hauled to the barn are ripe and dry they may be put in mows the same as wheat. I have had three days hard and steady rain on a crop lying on the ground without material injury, in fact, I have seldom raised a crop without at least a part of it getting wet after it was pulled. In planting large quantities of beans it is well to plant at intervals of a few days. Then with the machine they can be handled without any hurrying.

After the beans are off the ground it is generally fitted for wheat. Where it is intended to plant the ground to crops the next spring, rye is generally sown. This will afford a large amount of late fall pasture, when other pastures are short, and it is the first to afford a green bite in the spring. If allowed to get a start, it be-

comes almost impossible to keep it fed down. Many farmers plow under the fall-sown rye for corn, or beans again, and find it an excellent fertilizer. The beans are ready to be threshed at any time after pulling. This is done by steam power in much the same manner as wheat, although the separator must be one made especially for bean threshing. The large wholesale houses send out their buyers, and the greater part of the crop is bought in the barns and delivered by the farmer, the price ranging from $1.25 to $2.50 per bushel, according to the condition of the market and the quality of the crop.

The hand-picking is done by the wholesale houses. These houses employ a large number of women to aid in the work. The beans are first run through large fanning mills run by steam, which take out all the dirt and damaged beans. The beans are then carried by an endless belt, on each side of which the women are arranged, who pick out the discolored beans. The refuse beans are sold for sheep feed at twenty-five cents a bushel. It is the practice of many seed houses to furnish the seed and contract to take the crop at a certain price, but in many cases these houses have furnished the garden varieties, and the white field bean has, side by side, yielded four times the quantity and brought more per bushel. The vines and pods are fed to sheep and cattle, and a ton of them will go farther than a ton of hay. Many farmers are of the opinion that the vines and pods from a good crop pay all the cost of producing it.

MIDSUMMER AMONG THE SMALL FRUITS.

L. R. TAFT, MICHIGAN EXPERIMENT STATION.

To a large extent the success of future years with the raspberry, strawberry, and similar fruits, will depend upon the care they receive during the summer. At this time they are making new growths, and if proper care is given them, they will make strong plants that will be able to form large and plump fruit buds for the next year's crop. It often happens that a severe drouth during the summer checks the growth of the plants and, if a warm wet autumn follows, which causes the plants to make a second growth, they will most likely be injured by the winter. The judicious cultivator attempts to give such care as will tend to prevent this late and tender growth.

Raspberries.—After the raspberry crop has been gathered, it is well to cut out the old canes and thin out the new ones, thus throwing all the vigor of the plants into those that remain. The number of canes the plant should carry will depend a good deal upon the variety, and the condition of the soil, but about five strong canes will generally be found preferable to more. If the plants are grown in matted rows, they should be evenly distributed, and rather more can be left than when they are kept in hills. Formerly it was the custom to head back the plants during the summer, but as generally performed, it was an injury rather than a benefit, as the canes were allowed to reach their full height and were then cut back. In this way much of the strength of the plant was wasted, and the remaining buds, if they started at all during the season, sent out weak shoots that were often injured by the winter. As a rule a cane allowed to grow naturally forms large buds near the top, and from these the best fruit will be obtained. If they are to be cut back at all it should be done early in the season, when the young canes have reached a height of about two feet, and then the terminal bud only should be pinched off. As a rule, however, it will not be best for the commercial planter to head back red raspberries at all at that time, although with some sorts it may be desirable. In the case of the cap varieties it will be best to head the new canes back as recommended above, but if they have been neglected until they have reached a considerable height, so that cutting them back would sacrifice a considerable amount of wood, it will be best to allow them to branch naturally. During the month of August the plants should be watched, and if any of the canes are badly diseased with rust, it will be well to cut them out and burn them. To hold this disease in check the plantation should have been sprayed during the early part of the season with Bordeaux mixture. One spraying before growth starts, if supplemented with one or two others after the young shoots appear, will, to a large extent, prevent the spread of the disease. In order to secure a proper growth of the plants, regular cultivation should be kept up during the season up to the middle of August. After each rain the soil should be stirred, and in this way the moisture will be conserved, and the proper ripening of the fruit and a strong new growth will be secured to carry the plant through the winter.

Strawberries.—If a strawberry bed is to be kept for one or more years, it should be worked over as soon as possible after the crop is gathered, in order that the new plants may find a soil in suitable condition for starting into growth. If the field contains much grass and tall weeds, it is often a good thing to cut them with a mower, and if there is so heavy a mulch that it will hinder working the land, it can often be burned off. The fire will also destroy many insects, and, as the old strawberry leaves will also be burned, most of the spores of the leaf blight will be destroyed, and the injury the following year lessened. The bed may be broken up in various ways, among the best being to turn furrows away from either side of the row, leaving only a narrow strip with plants upon it. The furrows can then be worked down with a cultivator, and the rows of plants thinned out and freed from weeds with a hoe. In this way the ground will be broken up and prepared for the new plants that will be formed. Especially if the summer is a dry one, the cultivator should be kept going throughout the month of August, so that a crust cannot form. The new plantations also should receive similar care, so far as cultivation and hoeing are concerned. One of the principal reasons for the running out of varieties is that they become subject to and weakened by the so-called rust or leaf blight. In the case of some varieties, much of the foliage is entirely destroyed, and the spots are so numerous upon the flower stems that they are girdled, and as a result they shrivel and the fruit dries up. From this cause half the crop is often lost. It has been found that this disease can be kept in check, if the plants are properly sprayed with Bordeaux mixture. This should be put on in July or early in August, in order that the plants may make a healthy growth during the fall. This should be repeated in the spring before the growth starts, and again as soon as the blossoms are off. By the last application the flower stalks will be covered with fungicide, and the chance of the drying up of the berries will be greatly reduced.

Currants and Gooseberries.—In addition to the thorough cultivation and hoeing which should be given to currants and gooseberries, in common with all other small fruits, they will also require one or more applications of fungicides in order that they may retain their foliage, and make a proper growth. The various spot diseases to which the currant is subject, and the mildew of the European gooseberries in particular, by which these fruits are so frequently defoliated, can all be controlled, but to be entirely effective the remedies should be applied somewhat earlier in the season. From the above it will be seen that the care required by the small fruits during the summer months is about the same for all, consisting of regular cultivation and hoeing, and at least one application of some approved fungicide after the crop is gathered. While almost any of the copper compounds used for this purpose would answer, Bordeaux mixture is generally preferred, as it is cheaper, and is not only more effective, but it sticks more firmly to the plants, and in consequence the results are much more lasting.

FARM PHILOSOPHY.

REV. MARION RAMBO.

Theory is not equal to corn as a hog fattener.

Tickling the earth causes the fields to laugh with crops.

When the plowman counts the clouds he neglects the corn.

The man with a grievance is often a grievance to his friends.

The effect of a mule's kick does not depend upon the soundness of his brain.

Don't scold the cook about the victuals for which you have thanked God.

It is hard for some church people to learn that shouting will not pay debts.

It is impossible to cultivate a good disposition in a horse by swearing at him.

The still-house worm destroys more corn than all the cutworms put together.

Many men, if they possessed a "title clear to a mansion in the skies," would mortgage it.

Stealing a horse is not a much greater sin than working one hard on starvation rations.

It looks to me like an attempted swindle to try to get plenty of milk from a poorly fed cow.

If the weather would go out of business the corner loafer would go out of business, too, from lack of an excuse.

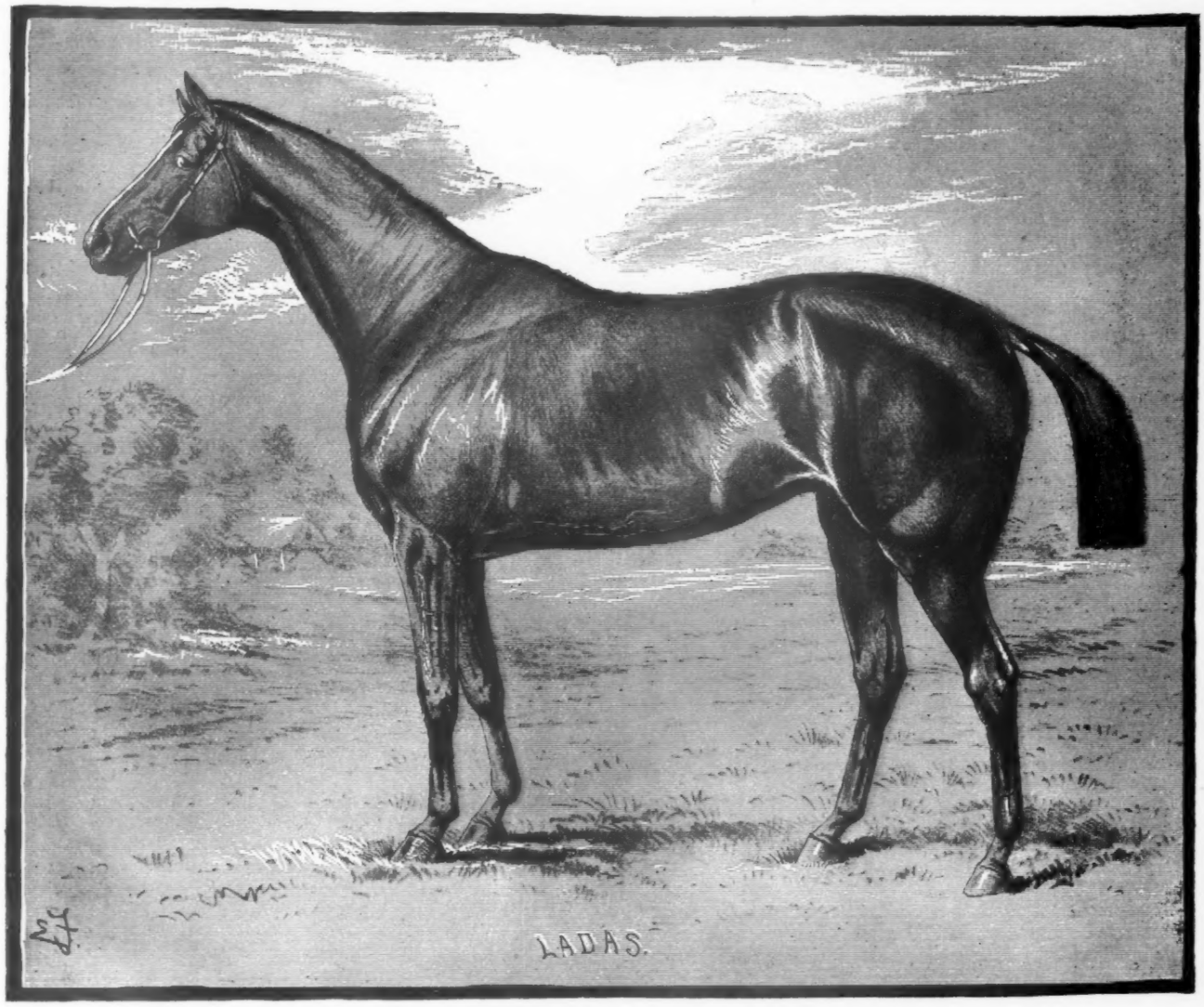
LADAS.

E. T. RIDDICK.

To win the Derby is the desire of every owner of thoroughbred horses in England, and when to "the Blue Ribbon of the turf" is added the political position of Prime Minister, it would seem that an Englishman's ambition could soar no higher. Lord Roseberry, besides being Prime Minister of England and leader of the Liberal party, saw his colt Ladas, by Hampton, out of Illuminata, win the Derby at Epsom Downs, on Wednesday, June 6th, by a length and a half. The enthusiasm was something wonderful, even on an English course. After the race, Lord Roseberry himself led Ladas back to the paddock, amid the cheers of tens of thousands of people. So dense was the crowd that the police were obliged to make a cor

the performance of Ormonde, the property of W. O'Brien Macdonough, of California, and half a dozen great horses, who placed the triple crown to their credit in the past.

"Derby Day" is, to all intents, a holiday in England, and each year immense throngs journey to Epsom Downs to witness this, the greatest equine contest in any country. The distance of the Derby is about a mile and a half, and the money value of the race, when it was first established, in 1780, never exceeded from $6,000 to $7,000, but of late years the average value to the winner has not been less than $30,000. Since 1890 the guarantee value of the Derby has been £5,000 to the winner, £300 to the second, and £200 to the third horse. The breeder of the winner also gets £500. The Derby is not the oldest of English races, for the St. Leger was instituted four years and the Oaks two before Sir Charles Bunbury carried



LORD ROSEBERRY'S FAMOUS DERBY WINNER.

don around the Premier and his victorious three-year-old, in order to relieve them. The Prince of Wales personally congratulated Lord Roseberry on his triumph.

Ladas is a bay colt, and his pedigree shows that some of the best blood of the English turf is concentrated in him. As a two-year-old, he started four times, and won each of his races. He won the Woodcote stakes, carrying one hundred and twenty-four pounds, at the Epsom spring meeting; the Coventry stakes at Ascot, carrying one hundred and twenty-six pounds; the Champagne stakes at the Doncaster fall meeting, twenty-six pounds up, and the Park Plate at the Newmarket October meeting. Ladas has filled but two engagements this year—the Two Thousand Guineas and the Newmarket stakes, both of which he won easily. If he goes on well, Ladas will be an overwhelming favorite for the St. Leger, which it is to be hoped he may win. This would emulate

off the first stakes with Diomed, 1780. Like the Oaks, it derives its name and designation from the twelfth Earl of Derby, and the race itself has invariably been decided on the Downs of Epsom, which, as far back as 1648, in the reign of the first Charles, appears to have been recognized as well adapted for the sport of kings. The largest field of starters was in 1862, when Caractacus beat a field of thirty-three. There are but two dead heats recorded in Derby annals. The first, in 1828, was run off and resulted in a victory for the Duke of Rutland's Cadland, who beat the Colonel. In 1884 Harvester and St. Gatien ran a dead heat, but the stakes on this occasion were divided. The race has been won three times by horses bred and owned out of England. In 1865, Gladiateur, bred in France, was the first foreign-bred colt to take away the "Blue Ribbon" from England's shores. Kisber, bred in Austria, and Iroquois, bred by Pierre Lorillard, were the two other successful foreign competitors.

Iroquois should have won the triple crown; he won the Derby and St. Leger, and was beaten in the Guineas by bad jockeyship.

Most farmers attach too little importance to thoroughbred blood in the horses which they purchase for use on the farms. For over three hundred years the thoroughbred horse has been bred for bone, stamina, courage, and ability to go, and go fast. Such care has been used in his mating that his potency is so great that he is able to every time give better heart and courage to the horses bred to him. One of the favorite crosses among many English farmers, where the blood horse is thoroughly understood and appreciated, is the thoroughbred stallion to the cart mare. This gives an animal with more substance and weight than the pure thoroughbred, but with a finer bone and much more beautiful appearance than the cart horse. The progeny also has the great courage and intelligence of the thoroughbred. While the farmer never sees the effects of the direct cross of thoroughbred horses on the ordinary stock of this country, if he would take the trouble to trace back "the old mare" who has endeared herself to him for her indomitable pluck and ability to go all day long, and at a rattling good pace, he will find that somewhere "a bit of blood" has been placed in her. Only a rich man can afford to breed thoroughbred horses, for the initial investment is an enormous one.

SAXONY SHEEP IN THE UNITED STATES.

R. M. BELL, ILLINOIS.

One of the most interesting chapters in the history of sheep raising in the United States comprises the period from 1820 to 1846, when the brilliant prospects of the Saxony sheep and its fleeces were utterly dashed to the ground by the tariff of 1846. This industry may be said to have been a creature of national legislation from its beginning, or, at least, from 1828 to the fatal ending. Spanish merino sheep were brought in at a time when the American people were seeking entire independence from the mother country in every line of products used by the people. Previous to this time the sheep of the country were a mongrel mixture of breeds, whose fleeces were only used in clothes for working people. The finer grades of clothing goods were imported. The Spanish merino sheep widely accommodated itself to the conditions afforded in this country, the crosses giving fleeces that very nearly approached the pure bred in fineness and beauty. From 1802 to 1820 the Spanish merinoes became widely disseminated and to all outside appearances seemed capable of holding their own against anything that might dispute possession with them. But the Saxony's fleece was so fine, so beautiful, and the cloths were so excellent, and broadcloth suits so aristocratic and within the reach of well-to-do people that no other sheep could satisfy the people. To add to the popularity of the Saxony sheep the wool was worth from $2 to $2.50 per pound. The farmers were captivated with such prices, and not stopping to think about the increased weight of the Spanish merino fleeces and the slight difference in the prices of the two kinds of wool, kept on buying Saxony sheep at fancy prices. It was found when the crash came that nearly all Spanish sheep had been crossed with these exceedingly fine wooled Saxons, and the constitution of the flocks of the country had been lessened in vigor. It was not difficult to care for high-priced sheep, whose fleeces brought four or five dollars each, but when the bottom fell out and values went down, the flocks went to destruction. This afforded the opportunity for the Spanish merinoes; but, alas, they had been greatly impaired, as most people then thought, by the Saxony cross. It was claimed that only two pure bred flocks remained uncontaminated with the Saxony merinoes. Whether this claim was merely for speculative purposes, as we are led now to suspect, is of small importance since the demand far exceeded the supply, and prices were very extravagant for sheep of unquestioned purity of blood. This stimulated the improvement of flocks, and it was not long before the merit of American bred Spanish merino sheep entitled them to the name of American merino sheep, and they are still known by this cognomen everywhere, tne world over.

In the meantime the Saxony sheep had a few friends in Washington county, Pennsylvania, in contiguous parts of West Virginia and on the opposite side of the river in Ohio. These gentlemen were well qualified for the charge of these Electoral sheep. In 1884 they organized the National Improved Saxony Sheep Breeders' Association and issued their first register. There were scarcely more than one thousand one hundred of this breed entitled to a place in the book of record. "The aim has been to breed a large, well-formed, vigorous sheep, and at the same time retain the beautiful, white, crimpy wool of the Saxony." Still continuing to quote from their book: "By long perseverance we have secured our object, and we now consider the improved Saxony an established breed, producing with great regularity lambs of the highest order, both in regard to fleece and body. The object of our society is not to get up a 'boom,' to use the favorite expression of the day, in order that prices of stock may be inflated above value, but our design is to preserve our blood pure that we may continue to improve and go on as near to perfection as possible." It was a matter of surprise and regret that these sheep were not exhibited at the World's Columbian Exposition. The plump, round forms, without wrinkles, short, well-set necks of these sheep, standing on short, straight, strong legs with well-shaped feet, with wool grading XXX or above, long, white, dense, crimpy, free from curly spots on top of shoulders or back, and extending evenly over the whole body," would have been of no ordinary interest to visitors, especially the foreign wool experts, who were there to see what Americans were doing in fine wool growing.

While Saxony flocks are not being increased in this country, it is just to say that the few who remain steadfast are doing as well as anybody in the sheep business, and expect to continue to breed and improve their flocks as long as they live. Their fleeces find a special demand and at high prices, which justifies the raising, and when they put their wethers on the market they bring quite fancy prices. Nor are the weights by any means inconsiderable as compared with other breeds of sheep. Whether in the course of time as the evolutions of agriculture and sheep husbandry go on, the Saxony sheep will be extensively disseminated, remains to be seen. This breed is gradually decreasing in Germany, being supplanted by mutton breeds, which gives an expectation that some day there shall be an under supply of this most estimable grade of wool.

FATTENING SWINE.

JOHN M. STAHL, ILLINOIS.

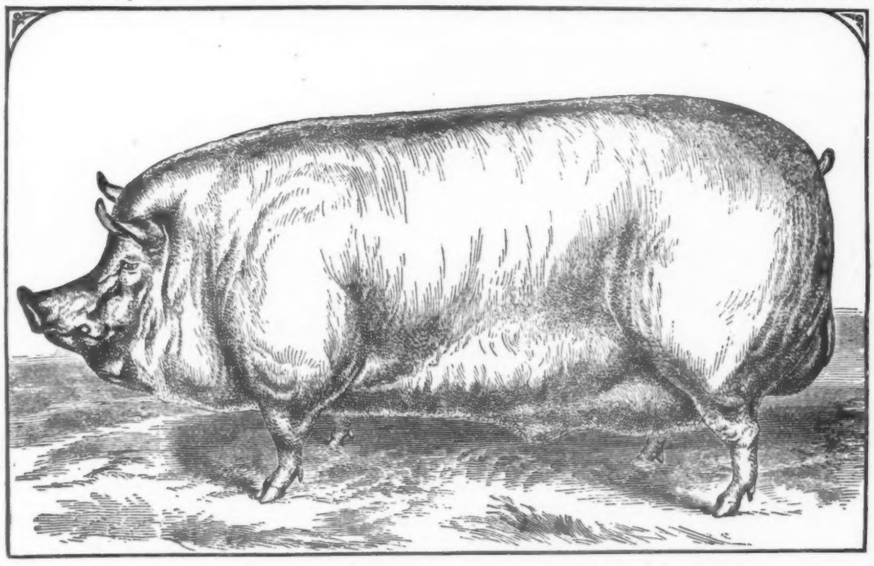
In swine feeding, the fattening process is frequently too long delayed. It should begin earlier in the life of the hog, for two reasons—that the hog may be marketed at an earlier age, and that it may be thoroughly fattened. One hundred scientifically conducted feeding tests, using above four hundred swine, showed to Professor Sanborn that to put a pound of gain on a hog weighing four hundred pounds requires fully one-half more feed than to put that gain on a pig weighing seventy-five pounds. By well fattening a hog, we not only add to his weight, and do that by putting fat on a frame that we have already prepared, but we add to the price per pound of the whole carcass. One has only to consult the market reports of Chicago and other centers of the hog trade, to get convincing evidence of this. Evidence of this may be seen in the Union stock yards, Chicago. There, as elsewhere, the thoroughly fattened hogs sell at top prices, and are the first to leave the pens. The hogs that go at low prices, or are held over, are those not well filled in and rounded out, that should have stayed in the fattening pen two to four weeks longer. The gain put on by hogs after they have reached a certain point in fattening, is not so apparent as before, but it is none the less real. I have heard this explained by old farmers, by saying that "more of the fat was put on inside," and this is the opinion to-day of Swift's and Armour's butchers. It is certain that the hog thoroughly fattened weighs heavier than it looks. The hog best fattened is almost sure to be guessed too low. Apparently the fat of the thoroughly fattened hog is more solid and is more compactly placed. It is noticed that hogs only fairly well fattened, in the parlance of shippers, shrink more when shipped several hundred miles than those extra well fattened, while those only moderately fattened shrink most of all.

I have heard my father boast, years ago, that for more than fifteen years he had not marketed a drove of hogs that had averaged less than four hundred pounds live weight. Undoubtedly he would have made more profit if he had marketed hogs as fat, but not so large. It has certainly been demonstrated that when one keeps a hog long enough to make it weigh four or five hundred pounds, he loses part of his profit. The most profitable hog is the one marketed when eight to ten months old. If it has been properly handled, it will weigh two hundred and fifty pounds, or a little more, gross. An average gain of a pound a day for a hog eight to ten months old is very near the proper amount. Fall pigs for the June market are generally quite profitable, and strong, well-kept sows will produce two good litters a year; but convenience will always make the spring litters outnumber the fall ones, and generally the most profitable hog is of a March litter. The dam should

be well nourished while suckling, put with her pigs on pasture as soon as the earliest grass affords good grazing, kept on clover pasture as much as possible during the summer, the fattening of the hogs begun as the pasture begins to fail in August, and the hogs marketed in November, December, or January.

It is a common mistake not to begin fattening until October. Some farmers think that hogs will not eat grain when on grass. This is erroneous. Hogs eat corn as well on grass as off it, except, of course, that when the pasture is a novelty, or, like red clover in blossom, for example, is very luxuriant and toothsome, they will not need or care much for grain. But when the pastures have become dry and hard, and are beginning to get scant, the hogs will eat grain readily, and it is a safe rule to begin feeding grain as soon as the pasture is no longer able to maintain the swine on a steady, rapid gain. Whenever animals are not making the maximum gain consistent with health, time and feed are being lost. If the fattening is begun as the pasture begins to fail, the process is gradual, and the change from green to dry food is made so gently that the digestive system suffers no shock. If the animal were put upon an entire grain diet at once, it would probably suffer from constipation.

Indian corn is the best single food for fattening swine. A hog can be grown on clover pasture more economically than on any other feed, and he can best be fattened on corn. But it does not follow that it is best to grow the hog on red clover only, or to fatten on corn alone. A monotonous diet is not wholesome; the health requires a variety of food. Where corn grows well, it may make four-fifths of the diet of fattening hogs, but that remaining fifth must be of something else. Pumpkins are an excellent thing to give to hogs fattening on a nearly-all-corn diet. One may feed fodder corn, boiled potatoes and turnips, steamed clover hay, apples, etc., to keep up the variety. It is not much of a task to boil food in large iron kettles, swung to a pole, or, better yet, in a steam cooker. Of course the hogs must have salt and charcoal continuously. I take a stout store box, bore two-inch auger holes, four inches apart, near the bottom of the box, and knock out each alternate piece between the holes. Then the box is set on supports four inches thick, is nailed to stakes driven solidly into the ground, and filled with a mixture of equal parts of salt, wood ashes and charcoal, and is given a tight roof. The hogs will work the mixture out through the holes as they want it. Frequently they are given a little pure salt. When hogs have salt constantly, and all the water they want to drink, they will not use too much salt.



THE GREAT PRIZE-WINNING CHESHIRE BOAR.

There is a decided preponderance of opinion among swine growers that it is always best to begin the fattening of swine with old corn, but that when the fattening is in the fall, it is well to feed new corn for the last two to three weeks, making the change gradually. When a variety of food is fed, the only advantage of feeding the new corn is the saving of labor, as it can be given to the hogs as easily as it can be put in a crib. Besides, when the corn is to be fed at once, it need not be husked so clean; in fact, it need not be husked at all—only pulled. When the fattening is begun in August, as I have recommended, it is easy and convenient to begin with old corn and to finish with new. Fattening is, to a certain extent, a forcing process, and the animals are confined, and are also indisposed to take much exercise. Therefore the sanitary conditions are apt to be most pronounced and their effects to be most hurtful when the swine are fattening. Be very careful that the inclosures, shelters, food and drink of the animals are quite clean. Carbolized water and quicklime are good things to use, employing them often, but not using much at a time. For fattening hogs, the best drink is pure water, from a trough or sandy brook.

CHESHIRE HOGS.

C. E. CHAPMAN, NEW YORK.

The Poland-China, Chester White, Duroc-Jersey, and Cheshire breeds of swine originated in this country. The Cheshire being of comparatively recent introduction, is less known than the other breeds mentioned, except in Central New York. The Cheshires were first bred in Jefferson County, N. Y., by A. C. Clark of Belleville, and shown at the State fair in 1859. In his neighborhood great care had been exercised in selecting and improving the native stock, until several farmers had acquired a local reputation for good hogs. A large imported Yorkshire boar was crossed upon these sows and the result proved a success. Pigs of this cross were selected, and the type was permanently established. The herd, owned by Clark & Green, was exhibited at Western fairs in 1870, ending with St. Louis fair, where it won the great pork packers' prize of $500. When sales stopped, owing to the panic of 1873, the herd was fatted and killed. On this account, the breed came nearly to complete extinction. About this time, E. M. Davis of Oneida county, N. Y., bought a litter of fine white pigs, called Cheshire. He was prejudiced in favor of the Berkshire, but these proved so superior that one extra sow was taken with a view to establishing a herd. A boar of the same strain was selected that was an "average" in all respects. Pigs from several litters were bred together until seventy-five per cent. of the blood of this superior dam was secured. From Mr. Davis's breeding all of the present Cheshires are descended. He collected the statistics and wrote the herd-book. Our illustration is a portrait of the boar which headed the prize herd in 1870. There has been but little change in the breed except a tendency to breed for a shorter nose and smaller ear. The type is so firmly fixed that the grades are always white, long, and show the characteristics of the full blood. The Cheshire is a long, broad hog, a shape which gives heavy hams and shoulders. Head short in proportion to length of body. Face slightly dished—ears thin, small, erect, and nose straight. The texture of both flesh and bone is fine and compact, hence, though the bones are very small, the animal never breaks down. This fineness of cellular texture gives the very best quality of meat—both lean and fat—being firm and solid, not soft and flabby like some other breeds. The Cheshires are unequaled in proportion of lean to fat meat. They are said to be the only hogs that will very nearly sink in water. Very few men can correctly guess their live weight, unless aware of their peculiar structure. The feeder of Cheshires can have lean meat only or both fat and lean, as he may prefer. If he wants fat he can get it by longer and heavier feeding, with carbonaceous food. An important quality of the breed is early maturity and rapid growth. At one year some of them will dress five to six hundred pounds. When dressed, their clean white skin looks like satin. The hair is short, fine and thin.

They are very tame and have the least "hoggishness" about them of any breed I have ever handled. One can catch a pig without a club. Sows with their first litters lie quiet while needed assistance is given. The sows are very prolific, averaging from eight to fourteen pigs to a litter, and are generally good milkers. The quiet disposition and vigorous constitution make them easy keepers. For three winters I have wintered the brood sows on raw flat turnips, and two hundred pounds of bran each. No other food was given. After pigs are weaned in spring the sows were turned into a swamp pasture, and were not fed until the middle of September. One of them thus summered took the first premium at the county fair in her class, being a most excellent animal.

THREE GOOD GATE FASTENINGS.

The form of the gate latch or fastening is an important portion of the structure, and care should be exercised in its construction. The form shown in Fig. 1 is very simple and effective. The latch, *a*, is of hard, tough wood, eighteen inches in length, three-quarters of an inch thick, and one and a half inches wide. Through the inner end a wooden pin holds it in position. When the gate is closed the outer projecting end rests in a notch cut in the post, as at *s*. All the plans shown admit of the gate opening either way if desired. In Fig. 2 a swinging latch is used, which should be about the size of that in Fig. 1. It is suspended by a wire at *r*. Two wooden pins preveht it from being moved too far in either direction. The plan in Fig. 3 is quite similar to the others, and is clearly shown. The latch, *c*, is shown in an enlarged form. A notch is

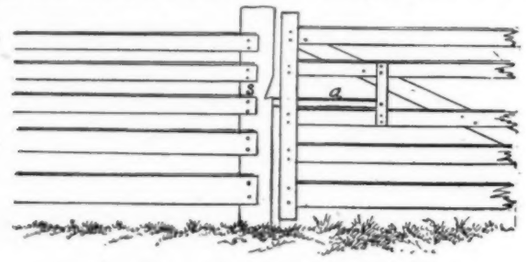


FIG. 1. SIMPLE AND EFFECTIVE GATE LATCH.

cut in the lower side, which rests on a pin when the gate is closed, the weight of the latch keeping it in position. Next in importance to the hinges of a gate are the fastenings, which should invariably be made of the very best material.

THE FARM LAWN.

A. G. CHASE, KANSAS.

A farmhouse without its grass plot is a desolate place. The dooryard is a true indication of the taste and character of its owner, being just as much needed for the comfort and education of the farmer's family as any other part of the farm. The past twenty-five years have improved the dooryards of Western farms, wonderfully; yet there are too many littered with ash barrels, chicken coops, and the many other odds and ends that accumulate if there is no distinctive part set aside for the lawn or grass plot.

One need not expect the clean-shaven, compact sod of the city lot, laid off with geometrical precision, but the farmer can have the yard immediately around the farmhouse well set in blue grass, with a shade tree here and there. Two or three mowings in early summer and one or two in the fall, will make it a pleasure and a comfort to the inmates of the house. We often hear the excuse given for the absence of grass around the house: "I've sowed blue-grass seed a dozen times, but never could get a stand." First and foremost, chickens must be excluded, at least until the grass becomes established. Then, in early spring, if the yard cannot be

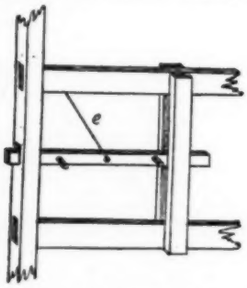


FIG. 2. SWINGING LATCH.

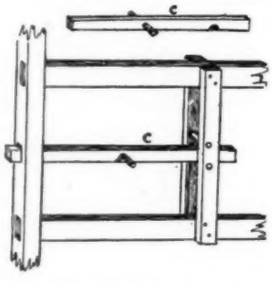


FIG. 3. ANOTHER FORM OF LATCH.

plowed, as is too often the case, rake the surface with a steel-tooth rake, removing all trash, boards, sticks and stones. Sow the surface with timothy seed.

As soon as the blue grass is well started in the pasture, or in the fence corners, cut some sods and set them in the yard here and there. The closer the pieces of sod are together, the sooner will there be a blue-grass sod in the yard. I put down a sod, say six by eight inches, every five or six feet, and, if the weather is dry, I keep the sods well watered until they get established. By the third year these will have a very close sod. I assist natural self-seeding, by scattering a part of the ripened blue-grass seed in the bare spots. The great enemy to blue grass in the dooryard is the plantain. This must be watched and attacked before it gets too much of a start. To fight this I took a piece of steel one and a half inches wide and one-eighth thick, had the blacksmith punch three holes to screw on to the end of a broom handle, took it to the grindstone and ground it chisel fashion; nailed a block on the side just above the chisel for a footrest, and I had a tool that could cut out a plantain, without destroying any grass or making an unsightly hole. [See illustration.] A little grandchild, six years old, often uses it as effectually as a grown person; indeed every member of the family uses it, and a few minutes, now and then, keeps the plantain in subjection. A carpenter's framing chisel, with a socket for the handle, can be bought very cheaply, and is the best tool for fighting this and other noxious weeds on the grass plot.

IMPROVED LAWN CHISEL.

TOPPING HAYSTACKS.

C. E. BENTON, MASSACHUSETTS.

Those who are obliged to store a portion of their hay in stacks, from lack of storage room in the barns, know how difficult it is to build a stack that will remain good until it is drawn to the barn in the winter. This is because it continues to settle while the hay is passing through the process of fermentation, known as "sweating." Hence it is best to top the stacks after haying, using for the purpose swale grass when that can be obtained, not only because it is of small value for fodder, but also because the broad, tough leaves mat together and shed the rains better than upland grass.

When the stacks are of considerable size, I have found great convenience in using what is called a "ladder bracket." In the illustrations, Fig. 1 shows the manner in which it is constructed. The upper pieces are of spruce or other strong wood, two inches square. Across their top is bolted a light plank six feet long, which makes a convenient platform. At *a* are iron pins put through each piece, which serve for hooks. By this means the bracket is hooked on the ladder round at any height desired, making an adjustable platform on which an assistant can stand to receive the hay from the man on the load, and pitch it up to the man on the stack. Fig. 2 shows it placed on the ladder ready for use. By using this simple contrivance, which a farmer can make in an hour or two, it is easy to top a large stack, building it up to a good form. In order that it may be perfectly strong and secure, it is best not to use nails in its construction, but fasten it entirely with small carriage bolts.

FIG. 1. LADDER BRACKET.

Stagnant Water at the Roadside.—Along many highways the depression at some points is so great between the fence and the beaten path of the roadway that water stands for a greater portion of the year. In many cases it would be a difficult matter to drain off this stagnant water, as the depressions were made by the use of the common road scraper, but in every case it should be done, even if it becomes necessary to resort to underdraining. In most cases, however, the object is accomplished by a trench dug along the side of the road, leading to a lower level, or putting in a sluice, thereby emptying the water to the opposite side, where often the natural lay of the land quickly drains off the surplus water. Allowing water to stand by the side of roadbeds is not only unsightly, but positively detrimental and injurious to the road, as by capillary attraction the soil comprising the roadway is continually soaked. The top soil may be dry, but underneath is damp and soggy, allowing heavy loads to deeply rut the driveway.

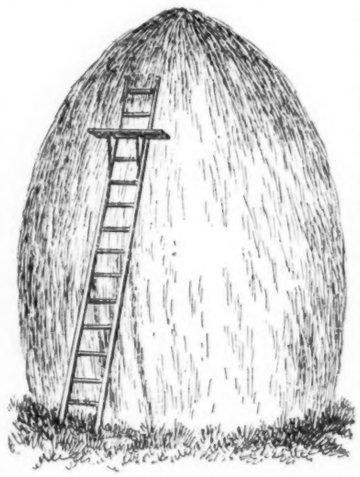
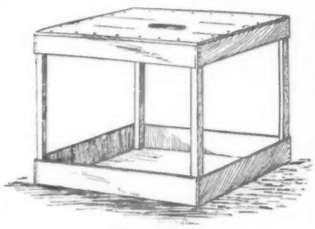


FIG. 2. LADDER AND BRACKET IN POSITION.

CRATE FOR SHIPPING LIVE FOWLS.

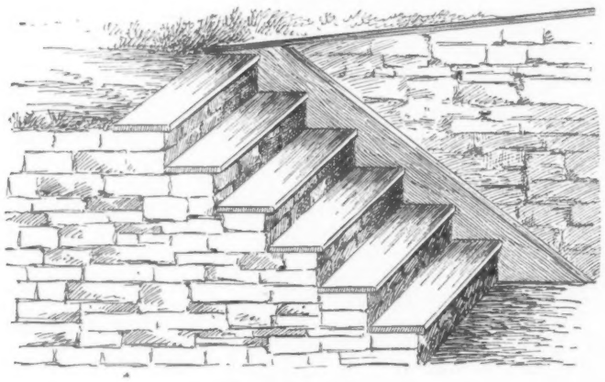
Express charges on live poultry being double rates, it is desirable to make the crate in which poultry is shipped as light as is consistent with strength. The illustration shows what is perhaps the best framework for such a crate. An empty grocery box of the requisite size may be sawed in the middle, making the top and bottom of the crate, though if the box is at all high some three or four inches only, of the top and of the bottom should be taken. The corner post of inch and a half pine should be well nailed to the box, and the sides and ends then covered with burlap or cotton cloth. The top may be of slats or of boards, as shown in the sketch. If of the latter, a hole should be cut both for ventilation and for convenience in handling. Straw should be placed in the bottom, and plenty of oats or wheat scattered into it. If the birds are to be shipped but a short distance, no water should be placed in the crate, but if sent a long way a tin cup should be provided, and notice pasted on the outside that the fowls within are to be watered by the express messenger. If food is provided for a long journey it should be placed in some receptacle so that the birds will not soil it before it is all eaten. Do not crowd birds that are to be shipped a long distance. If they are to be on the way but twenty-four hours, or less, some little crowding will not injure them.



LIGHT POULTRY CRATE.

THE OUTSIDE CELLAR STAIRS.

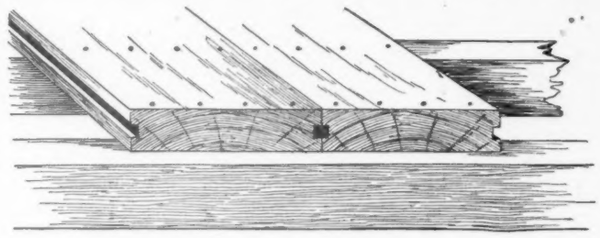
As usually constructed, the outside cellar stairs become very much dilapidated after a few years of use, and many serious accidents occur by falling or slipping from and upon the decaying steps. If stones of the right length can be obtained, they are the best possible material for the steps, the next best being plank, though neither can be depended upon unless the whole space underneath the steps, down to the level of the cellar floor, be laid up in masonry. Where only small stone, either round or flat, is at hand, lay up the stairs of this material thoroughly imbedded in mortar, making the steps of the needed height. When this is done, cut a plank step of the proper width and length for each step, and place them on top of the stone step, as shown in the accompanying illustration. Upon each side fit a retaining board, and the result will be steps that are durable and generally satisfactory. If possible, make the steps from two-inch pine plank, covering the whole with folding doors, in the usual manner.



DURABLE CELLAR STAIRS.

BARN FLOORS.

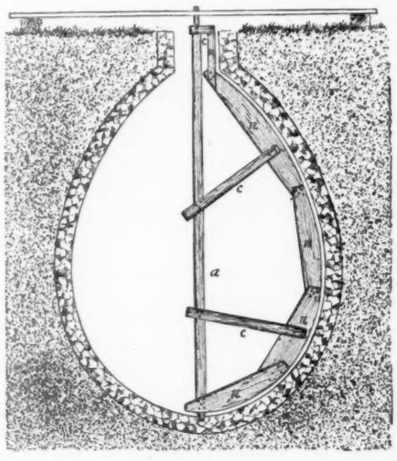
The floors of a barn are a very important portion of the structure, and considerable care should be exercised in choosing the material and placing it in position. For durability, non-liability to warp, and one on which the team can get a foothold, there is nothing better than the common white pine. Most of the hard woods will warp when the sides are unequally dampened, and horses find it difficult obtaining a firm foothold to haul in heavy loads. The plank upon the driveway floor should always extend crosswise. It makes but little difference about the direction of the portion under the remainder of the building. If the joists are heavy, and placed two and a half feet apart, two-inch plank will be strong enough. However, if possible, use those two and a half or three inches thick, and be certain that they are well seasoned. Obtain them a year in advance, pile up under shelter, and as far from the ground as convenient. Both edges of plank should be jointed and grooved, and a tongue of some soft wood used, as shown in the engraving. The manner of laying the floor is also clearly shown. The ends of the planks should be spiked, unless there is some doubt about their shrinking, in which case lay them loose, driving them firmly together during a dry time. If not practicable to obtain thick plank, lay the floor double. The lower course may be of well seasoned inch boards, for the upper one use one and a half inch plank jointed, but not grooved, being nailed in place when thoroughly shrunken. The joints or cracks in the two floors should not match.



MATCHED FLOOR, WITH INSERTED TONGUE.

CONSTRUCTING A SYMMETRICAL CISTERN.

Cisterns that are built in the ground are usually of a round form, as they are more durable and less liable to cave in than those of a square or octagonal form. To make a round cistern in the usual manner requires a man with a correct judgment of distance, unless a proper framework is used as a model. The accompanying illustration, from a sketch by L. D. Snook, shows how this frame is made and used. After the excavation is made, and the bottom laid with brick or cobblestone, the center of the bottom is found, and a hole is made, in which is inserted the lower end of a standard, *a*, the upper end of which revolves in a hole in a plank, the ends of which rest upon the banks of the excavation. To this standard has previously been nailed a skeleton frame of boards, *c*. The outer sides of these represent the form and inclination of the cistern walls. It is plain that as the walls are laid up, and this guide is brought into position by revolving it, the workman can place each brick or stone at the right angle. To make all easy working, an inch space should be left between the wall and outer edge of guide. For a common house cistern a diameter of eight feet inside the walls will prove large enough, and would be a proper guide in the formation of the walls. If possible, fill in the space back of the wall as the structure progresses, tamping the soil firmly in position. If it be dry weather, it should be made wet and firmly pressed, that the inside pressure when filled with water will not cause the wall to crack or give way. An egg-shaped form is best, with the top or small end long drawn out or elongated, as shown above. This guide is not expensive, and when the walls are up it is knocked to pieces and thrown out.



MANNER OF BUILDING A GOOD CISTERN.

Chores Around the House.—Do not plan to have all of the rainy day work done at the barn. There are many little things about the house that need attention, which men can do better than women. Remember the little chores, such as repairing, painting the floor, building more closets, or cleaning out the cistern or the cellar.

TETHERING OR PICKETING ANIMALS.

DR. A. S. HEATH.

Farm stock may be tethered out to grass so as to leave them out all day without other care than to tie them out in the morning and take them in at night. This may be done in many ways, but whether turned out or tethered to grass, all animals require water in the middle of the day, and economy demands some watchful care; even at pasture, surrounded by the best fence, accidents may occur. A cast horse or cow must get relief soon to save their lives.

When stock are tethered or picketed, even in the best manner, accidents are more frequent than when pastured. For either horses or cattle a strong web or leather halter, with a ring in the center of the nose-piece, is the best arrangement. In feeding, the chain or rope is not in the way, and they are more easily controlled. Cattle can be pinned or staked out, for they will not so easily get cast. But horses getting the rope or chain around the hind fetlock, will kick till they rasp or cut the limb, and, even when cast, keep up the struggle, resulting in serious injury.

For tethering horses, two high posts may be firmly set, to the top of which a large wire may be tightly stretched, a strong iron ring having been passed over the end of the wire before fastening to the posts. Then one end of a light, strong rope is tied to the ring, sliding freely over the wire, and the other end to the ring of the nose-piece of the halter, long enough to easily permit grazing, but not long enough to permit of either the fore or hind feet getting over it. This will give a safe range a few feet each side of the posts. Thus by a set of posts and wires a considerable extent of grazing may be permitted to a horse that, without such an arrangement, would be kept shut up in the stable. Properly located trees may serve the place of posts. By this plan a horse may roll without getting cast. A similar plan is used for cavalry horses.

EXHAUSTIVENESS OF CHURNING CREAM.

E. H. FARRINGTON, ILLINOIS EXPERIMENT STATION.

Two of the important points in churning cream are: First, to get all the butter there is in the cream, and, second, to obtain butter of a fine flavor. Nearly all dairy thermometers designate 62° F. as the temperature of churning. This temperature was adopted when nearly all cream was separated from milk by some gravity process. Milk was set in a cool place, in shallow or deep vessels, for a number of hours, until the cream rose to the surface. This cream was then skimmed off, ripened, and churned. Such cream usually contains about fifteen to twenty per cent. fat. It is more often fifteen than twenty, and probably seldom as high as twenty per cent. fat.

It was found that thin cream obtained in this way must be ripened and churned at 62° F. to give the best results. Cream obtained by shallow setting of milk is thicker than that from deep setting of the same milk, provided the milk is left out in skimming. Such cream can be churned at a lower temperature and more quickly than cream obtained by deep setting of the same milk. The cream obtained by either of these gravity processes of handling milk is extremely variable in thickness. This is caused by the lack of uniformity in the temperature at which the milk is set, and the manner of skimming practiced by the different operators. If thin gravity cream is churned sweet, too large a per cent. of the butter is left in the buttermilk. An attempt to churn such cream either sweet or sour at as low a temperature as 55° or 50° F. would probably exhaust the motive power of the churn. The butter would not come. Consequently 62° F. is the temperature at which the most efficient churning can be made of sour cream obtained by gravity processes of separation.

Since the skimming of milk began to be done by a machine, there has been such a development in the manufacture of these separators that they can be adjusted so that the thickness of the cream can be regulated, and cream containing one-third butter fat can be obtained by them from sweet milk. It is impossible to get such thick cream by the gravity processes of skimming milk, and have the skimming efficient. The best separators can be so adjusted as to give a thick or thin cream, and in either case there may be only a trace of fat left in the skim milk. Experiments have shown that the lower the temperature at which cream is churned, the less fat there is lost in the buttermilk. Thin cream is not generally churned at as low a temperature as 50° F., because it is almost an impossibility to make the butter come at this temperature, but thick cream containing from twenty-five to thirty-five per cent. fat can be churned at as low a temperature as 45° to 50° F. Such thick cream, which can be obtained from a separator, has been churned at this low temperature in a reasonable time (thirty to ninety minutes), and the buttermilk contained only a trace of fat. This is true of sweet as well as of sour cream.

The exhaustiveness of churning seems to depend on the temperature at which cream is churned, but the cream must be thick, if it is churned at a temperature of 50° F. This is the temperature of the buttermilk when drawn from the churn immediately after the butter comes, and not always the temperature of the cream when it is put into the churn. If the churning is done in a warm or cold room, the temperature of the cream will gradually attain that of the room where the churning is done, although it may have been warmer or cooler when put into the churn, so that the temperature of each churning of cream is the temperature at which the butter comes. The friction of the cream in the churn will not cause a perceptible change in temperature, and the influence of the temperature of the room to warm or cool the cream in the churn depends upon the amount of cream or size of the churning. If one hundred pounds or more of cream is churned in one churning, a difference of five or ten degrees between the temperature of the cream in the churn and the air outside of the churn has little or no influence on the temperature of the cream. It might, however, have considerable effect on churnings of small quantities of cream, as they would be more easily changed by the temperature of the room where the churning is made.

It is necessary to sour or ripen thin cream in order to get an exhaustive churning, but the present indications seem to show that within certain limits the thickness of the cream, and the temperature at which it is churned, have more influence on the exhaustiveness of churning than does the acidity or sourness of the cream.

MIDSUMMER DAIRY HINTS.

GEORGE E. NEWELL.

Keep the stable ventilated and cool.

Keep hogs and calves out of the cow pasture.

A strong fence is the best remedy for unruly cattle.

Grimy hands on a milker make the cows teats sore.

A cow's best point is the development of her udder.

Mire holes in the pasture should be filled up or fenced off.

If a cow leaks her milk, empty her udder three times a day.

A shed is better than a leaking tree to shelter cattle from a storm.

Don't overstock the pasture to reduce the feed to a minimum quantity per cow.

Graining milch cows in summer pays only when the pasture feed is insufficient.

There are lazy cows and industrious ones, just as there are busy bees and drones.

You cannot have good silage next winter unless you use the cultivator freely now.

Milk the cows by the clock. Turn them back into the pasture as soon as they are milked.

Grasses and clovers are what makes profitable milk, and not daisies, thistles, and bushes.

If you keep a cross bull in the field, put signs up to that effect, or the loss of a human life may lie at your door.

A few shade trees in the grazing field are a humane and useful provision, but a range of woodland is a positive damage to the dairy.

Weigh your milk every day, if you think the maker is cheating you, and then test its quality to see if you are cheating the maker and yourself.

Hot weather, rank grass, industrious cows, cold milk, thick cream, a wise butter-maker, and golden butter with a golden price, all go together.

If dairymen do not explicitly insist on the milking being done in a cleanly manner, average hired men are not likely to be overscrupulous in that line.

No one can tell whether he is making money out of his dairy or not, until he keeps an accurate account of the cost of maintenance, to offset the gross income.

If you do not have a canvas-topped milk wagon, protect the cans with pieces of sacking dipped in cold water as you drive to the factory hot summer mornings. The heat of the summer sun has spoiled many a gallon of pure, sweet milk on the road to town.

GIRLS AND WOMEN AS BUTTER MAKERS.

ELLA ROCKWOOD, MICHIGAN.

There is no reason why men should have a monopoly of the business of butter making. A woman can do the work in a factory or creamery, and why she is so slow to push herself into such positions is passing strange in this age of the world, when women are crowding men out of their own appropriate lines of work. Butter making is really a woman's work. In Great Britain and all parts of continental Europe it is almost exclusively in their hands. Not only are women the managers and workers in the dairies, but also the teachers in the dairy schools. There is nothing about the work requiring the outlay of more strength than the average woman possesses. The classes in our dairy schools should be well filled with girls and women. Other things being equal, women are naturally better butter makers than men. For the home dairy, also, a course at a dairy school will be of great value. Farmers' wives and daughters generally would find it a source of profit as well as pleasure. The cost is so slight as to place it within the reach of nearly every one. Many of our States are now giving a course of instruction in dairying in connection with the agricultural colleges. The classes ought to be well filled by young women as well as young men.

A BOVINE FOSTER MOTHER.

From the time of Romulus and Remus to the present, stories have been repeated of wild female animals adopting and nourishing the young of other species than their own. An authentic case was witnessed in Maine, last summer, wherein the circumstances were reversed, and the young wilding sought sustenance from a domestic animal. It was on the farm of Mr. Frank Chase in Aroostook county, who was somewhat astonished, one summer evening, at seeing one of his Jersey heifers come up at night followed by a very dissimilar pair of young. One of them was her own calf, while trotting complacently beside it was a young caribou or reindeer of about the same age. During the afternoon the cows were feeding near the woods, from which there approached the hungry little creature. The motherly instincts of the heifer were aroused and she met the mute pleading of the stranger in a friendly way. It was soon drawing its much needed nourishment from one side, while her own offspring tugged at the other. From that hour the adoption was complete, the heifer seeming to show the same care and solicitude for her protégé as for her own calf. It is supposed that the little foundling had been abandoned by its dam. Twins are quite common among caribou, and triplets are not unknown. When a dam finds herself with more numerous offspring than she can supply with sustenance she disowns the superfluous one, and leaves it to shift for itself, or perish. In the case under consideration, the deserted youngster found quite unusual adoption and nourishment. It readily adapted itself to civilized life and became very tame, fearlessly approaching any person and licking the hand extended toward it, then striking out playfully with its front feet. It was treated with great friendship by the entire herd of cows, which seemed equally astonished and amused by its agile and frolicsome pranks. It was a very interesting little creature, but somewhat awkward and ill-shaped as to legs. It was observed that however active and long continued its frolics might be, it never panted, or breathed audibly, owing to its large lungs.

THE YOUNG CARIBOU IN SEARCH OF A FOSTER MOTHER.

Keeping Milk in the Cellar.—Most farmers, for want of a more suitable place, keep the milk and cream in the cellar. If suitable and well-ventilated shelves be provided for the pans, the cellar be properly ventilated, and the air kept cool and free from odors, then the cellar-set milk will produce quite as good butter as a poorly attended creamery and at one-half the trouble, unless cool, running spring water is available for cooling the milk, and maintaining it at the proper temperature. To keep a cellar cool in summer it is very necessary that the direct rays of the sun and warm currents of air should be excluded, and this can only be done by heavily shading the windows and keeping the doors closed from sunrise until sunset, when they may be opened. During the sultry nights of midsummer, the doors should be opened only for an hour very early in the morning. Always remember that you cannot reduce the temperature of the cellar atmosphere by admitting warmer air from the outside. Hence, ventilate only when the outside air is equally as cold or colder, unless fresh air be desired.

FEEDING THE COWS.

L. S. HARDIN.

There is a great deal being said and written now-a-days about standard rations for cows, and much science is brought into requisition to make those rations correctly balanced to fit the physical requirements of the cows. Every young farmer who hopes to become successful in dairying should study such tables and become accustomed to the technical terms, so that he will know just what they mean wherever he sees them. Having done this, he should learn the cost of different cattle foods delivered on his farm, whether raised or purchased. Knowing this, he should then make his own standard ration, and whenever he cannot get the materials for making that standard without paying too much, he must look for substitutes in kind and quality.

The ration, as estimated, is most conveniently the food for twenty-four hours for a cow weighing between eight hundred and one thousand pounds. This much can be done with books, and is a very useful part of the lesson. The real test of merit in this work comes from the actual feeding of the cows. The rations may be most scientifically correct, and fed in exact proportions, and yet fail to produce or return the first cost, which should not have exceeded from fifteen to twenty cents a day per cow. The best dairymen claim to make butter worth fifty cents a pound on a ration not exceeding thirteen cents a day. But it will be seen that when the ration costs twenty cents, the cow must give at least one pound of butter a day in order to pay her board bill and do much better than this, if any money if to be made out of her.

With a cow in good condition, fat and fresh, and the ration properly mixed, the test may be said to have just begun. The individual characteristics of each cow are not to be studied. One will find big eaters and small eaters, big milkers and small milkers, rich milkers and those that give thin, poor milk. All the virtues, or all the faults are not to be found in any single cow. A general average must be reached. For this do as little guessing about them as possible. Weigh the milk of each cow at every milking, and test the butter fat in the milk often enough to learn what her standing is. Now comes the vital point of how much to feed her. Having learned this, the work will not have to be repeated during her life.

When a ration is made to suit the standard, then apply it to each cow in turn. Note the cow's weight, and start with a small quantity of feed, daily increasing it up to the full amount that she can be induced to eat up clean. Hold her at this heavy feed for a few days and see at what point in the increase of feed she returned the greatest profit. If you can get no satisfactory results, then change the proportions of ration. If she is very thin in flesh, increase the fat-forming parts of the ration. Keep experimenting with the cow until satisfied that she cannot be made profitable, then put her out of the herd. One good way to determine what part of the ration to increase, is to first feed the cow about all she will eat and then try and tempt her with handfuls of bran, corn meal, oil meal, or whatever makes up the ration, to see which she seems to need the most. Such tests are never conclusive, but they often lead to good results. The point is to study the cows. Each one has a different nature from the other, and the only way to make money with them is to get a thorough knowledge of each one and then treat each in such a manner that she can return all that she is capable of doing. To make money one must have good cows, well fed up to their extreme limit of profit, and then make a good article of milk, butter or cheese.

CARE OF HORSES' MOUTHS.

W. J. MARTIN, V. S., ILLINOIS.

During the many years in which the writer has been engaged in the practice of veterinary medicine, there is nothing that has been more forcibly brought to his attention than the indifference of most people to the condition of the horse's mouth. They seem to think the mouth never becomes deranged, when, in fact, it is one of the most sensitive organs of the equine economy. All young horses coming three and four years old should have their teeth and mouths carefully examined when any symptoms of tenderness is shown in the mouth, as it is at this age that some of the milk molars are replaced by the permanent ones. In some cases the crown of the former is only partially displaced, and gives rise to much pain and annoyance to the horse. I have seen a young horse that had its throat blistered with liniment and was treated for distemper, when the trouble was due to a displaced crown of a milk molar, which, upon removal, gave instant relief. Again, in some horses the structure of the teeth is of a comparatively soft nature, and wears rapidly on the grinding substances in a ragged and uneven manner, which severely cut and lacerate the tongue and cheeks. This defect may be easily remedied by the use of the mouth rasp, an instrument that may now be found in nearly all hardware stores. To heal the raw surfaces, a little alum and borax dissolved in water will act effectually. This humane method, if pursued by people who own horses, will prevent much suffering to the horse, and at the same time amply repay the owner in the improved appearance of his animal, and in many cases prevent the loss of much food by quidding and slobbering.

A few words in regard to those bugbears of most horse owners, namely, lampas, so-called, and wolf teeth. Lampas is supposed by most people to possess some mysterious power over a horse, whereby his appetite becomes deranged. They therefore resort to cutting and burning the poor brute's mouth under the mistaken notion of curing the lampas. The writer of this has been engaged in the care of horses for twenty-five years, and has yet to see a horse that was affected physically in any way by lampas, except in the imagination of its owner. It is the same with the so-called "wolf teeth." These teeth are the vestigial remains of premolar teeth, that in the remote ancestors of the horse were functional, and they have become, through disuse, mere rudiments as it were of their former selves. They do not, by some occult means, effect the eyes of horses and cause them to go blind, nor are they responsible, as some good people contend, for a horse being in poor condition. Nor is it at all necessary to punch them out with a hammer and cold chisel.

RAISING TURKEYS IN VIRGINIA.

NANNIE CABELL.

Turkeys may be made very troublesome and very expensive to raise, or they may be reared with but little expense and trouble except in the first ten days of their existence. I formerly kept up turkey hens, letting the chicks run in and out of the coop at will, until they were well feathered. But one of my neighbors, who was more successful than I, told me that I took too much trouble and kept them up too long, so I adopted her plan. I made a pen of fence rails, high enough for the turkey hens to stand up in comfortably. It is higher at one side than at the other, and covered closely with plank so as to shed rain. A good deep drain is made at the upper side of the pen sloping off to each. With the turkey hen and her brood thus housed, one may rest peacefully in the heaviest downpour, feeling assured that the young turkeys are dry. If no slope on which to make the pen is available, have a ditch all around with openings at two or three places so the ditch will not fill up. I try to have several turkey hens hatch at one time, and put all in this pen, as they are friendly creatures. I keep the hens up in this pen about ten days. After that, every bright morning as soon as the dew is off the grass I let them out, and off they go slowly and carefully, not tiring their brood with dashing around after the way of the ordinary hen.

Toward evening they will come up for their accustomed feed, and then I put up the hens for the night. There is no better feed than the curd from boiled buttermilk or clabber. If about a tablespoonful of strong vinegar is added to a gallon of the buttermilk or clabber when put on to boil, the yield of curd will be very much larger. I feed chiefly of this, but add bread crumbs also, either of corn or flour bread. The latter are soaked in buttermilk. Screenings or any scraps of vegetables or meat are greatly relished by them. A variety of feed is as good for poultry as for man.

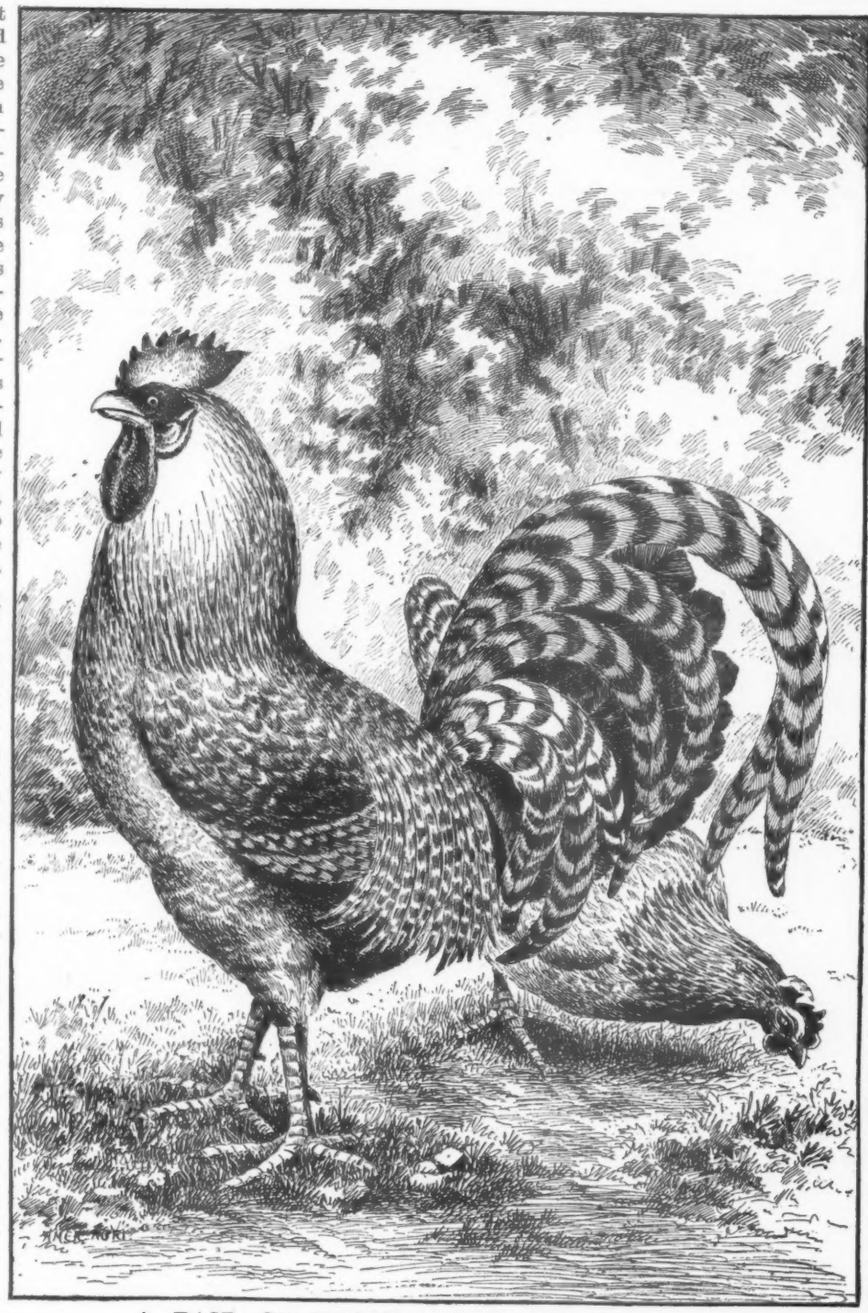
The food of turkeys is a small expense when they are allowed to roam the fields at large, catching grasshoppers, worms and bugs of all sorts. Tobacco raisers find them very good for worming the growing plants, and the worms are good for the turkeys. Their sharp eyes can detect a worm that others would never find. My father used to buy as many half-grown turkeys as he could, and put them to worm his large tobacco crops. In the winter there would be many a good dinner at home and many turkeys to sell, so they paid well. I have found it worse than useless trying to get them up when a cloud is seen rising. If left to themselves their instinct teaches them to select a good place of shelter. I have raised and seen them successfully raised by keeping the mother hens up till the young ones were half grown, but, I think, they ate their heads off many times, besides the great care they required. Give them liberty to roam at large after they are two weeks old.

Milk.—Trying to get much milk from a poorly fed cow is like trying to overdraw your bank account, and about as mean.

THE AMERICAN DOMINIQUE.

H. S. BABCOCK.

The American Dominique is the oldest of strictly American breeds. It is a good example of what can be done by selection with a definite end in view. Its pedigree terminates, as one traces it backward to the source, in the common "hawk-colored" barnyard fowl, sprung from no one knows what, the result of promiscuous breeding. In its early history Dominiques had both single and rose combs, and it is altogether probable that the single-combed birds were one of the progenitors of the Barred Plymouth Rock, though that excellent breed doubtless had a multiple origin. But finally the rose-combed birds supplanted the single combed ones, just as the pea-combed Brahmas supplanted those with a single comb. By constantly selecting rose-combed fowls with a barred plumage and those that had the largest size, the Dominique gradually shaped itself into a distinctive breed. No one knows, or if he does he maintains a mysterious silence, who has the honor of originating this breed. It seems to have been like Topsy, and just "growed." The Dominique has an excellent shape. It is not like that of the Plymouth Rock, but is longer in body and fuller in tail, and suggests both the Dorking and the Hamburg. Most persons are apt to be careless observers, and even some who pose as experts seem to be ignorant of the true type of a Dominique. Hence we sometimes see birds winning prizes that are, in reality, more like Plymouth Rocks than Dominiques, and perhaps were produced by crossing the two breeds. Indeed at one exhibition held a few years ago a prominent exhibitor confessed that he put the two breeds together, and those that come with rose combs he exhibited as Dominiques, while those with single combs were named Plymouth Rocks. These birds were not successful winners at this exhibition, because the judge was a real expert and detected the cross. Their shape is an admirable one for a general purpose fowl, as it indicates good laying qualities with table properties of no mean order, and, in fact, the Dominique is an excellent layer and makes really good poultry.



A PAIR OF TYPICAL DOMINIQUE FOWLS.

To a fancier, the Dominique needs much improvement. The comb is not so neat as he could wish, though this feature has greatly improved in the past ten years. There are not nearly so many outrageous combs, great shapeless masses of flesh, as there used to be, and in some strains the combs are getting to be really handsome. The plumage, however, is the most defective point in the fowl. It is described in the American Standard of Perfection in precisely the same words as are used in describing the plumage of the Barred Plymouth Rock. It ought to be just like that of the Barred Plymouth Rock, but it is not. The hens are too dark and have a "muddy" look. The beauty of a barred plumage consists in having the alternate black and white bars clearly defined and stand out distinctly upon the fowls. This can be attained only by having the light bars wider than the dark ones, and having the latter narrow. There seems to be no reason, if the same skill were used in breeding Dominiques as has been employed in breeding Barred Plymouth Rocks, why the Dominique should not have as beautiful a dress as its descendant. But the fact is to-day it has not. To a man who keeps fowls for profit these matters are of little moment, and a farmer, unless he also be a fancier, as some farmers are, will not be deterred from keeping Dominiques because of the lack of these nice points. The Dominique is not a very popular fowl, despite its great value as a practical, every day, useful breed. This want of popularity is probably due to two things: first, the defects which have been indicated, and which breeders have neglected to remedy, and, second, the smaller size of the fowl compared with that of its newest rival, the Barred Plymouth Rock. Americans like large fowls. Even if it could be demonstrated that there was just as much profit in raising a small fowl as in raising a large one, the large fowl would have the greater popularity. Yet we must not forget that size is a quality that can be obtained. The American Dominique is a much larger fowl than were its ancestors, and one breeder informs me that his fowls are constantly increasing in size, and that he had last season a cock which weighed nine pounds. In a few years, with careful selection, early hatching and breeding only from matured birds, the Dominique could probably be bred to a size which would closely approximate that of the Plymouth Rock. It is doubtful, however, whether it can ever hope to obtain the popularity that the Plymouth Rock possesses. The latter fowl has such a strong hold upon the public that it would take a great deal to shake it, and inasmuch as the practical qualities of these two breeds are so very

similar, it is not probable that the Dominique can ever supplant the Plymouth Rock. It is safe, however, to say that if the Plymouth Rock had never appeared, the Dominique, properly bred, would have stood a good chance of possessing the popularity that has been so liberally bestowed upon the Plymouth Rock. But while it may never be a serious rival to the Plymouth Rock, there does not seem to be any insuperable difficulty in the way of its achieving a much greater popularity than it now possesses, and one that is more nearly commensurate with its great practical worth. If it fails to do this, it will be because its breeders neglect to make such improvements as are within their easy reach, and which they ought to have made years ago.

IMPROVING THE FLOCK.

S. B. BEEBE.

A farmer who has only common hens, but who would be glad to get a flock of Plymouth Rocks, desires to know just how he can do it without purchasing eggs for hatching, in which he has little faith, or buying a pen of fowls that will cost him more than he cares to expend. He desires also to keep his present number of hens, and does not wish to build several yards to keep his breeding stock separate. His fowls run at liberty, and he finds one male bird sufficient to render the eggs fertile.

Such are the conditions. While it might be better to buy the eggs for hatching, or buy a pen of fowls and thus be able to get started immediately with thoroughbred stock, the inquirer is not willing to do it, and there remains no other way for him than to grade up his stock. Let him buy a Plymouth Rock cockerel and turn him in with the hens, killing off all other male birds. The chickens hatched will be one-half Plymouth Rock. After killing all of the cockerels, let him select as many pullets as he desires to keep, choosing those that most closely resemble the Plymouth Rock, and dispose of all of the others, old hens and pullets. Mate these pullets to their sire—that is, let him run with them, and hatch as many chickens from their eggs as may be desired. These will be three-fourths Plymouth Rock in blood and will show the characteristics of the breed quite strongly. Sell off the old hens and such pullets as he does not desire; get rid of the old cock and buy a new thoroughbred Plymouth Rock cockerel. The chickens next year will be seven-eighths Plymouth Rock, and from them can be selected pullets that only an expert could tell from thoroughbreds. Mate these to their sire, and the chickens next season will be fifteen-sixteenths Plymouth Rock in blood, and for all practical purposes thoroughbred. He has bought but two male birds and turned his flock into thoroughbreds. But he should now purchase another thoroughbred Plymouth Rock cockerel, and after this he will be in a position, when a new male is needed, to exchange a cockerel of his own for a thoroughbred Plymouth Rock, or to sell his cockerels and purchase such as he wishes. The small percentage of other blood will not show in the chickens, and if his choice of pullets each year has been intelligently made he will have a flock of fowls from which exhibitors will be glad to purchase exhibition specimens at a good price. At this time the third male bird having been used two years, there will be but one-sixty-fourth of the original blood, a fraction so small that it need not be considered at all. Of course there may be a sporadic case of reversion in which the traits of the original fowls may appear, but such a case will be of so infrequent occurrence that it will scarcely affect the number of culls.

This is a very good plan to pursue, its chief objection being the time that elapses before success has been attained. But the fowls have been growing better each year, and the farmer has been getting a larger income from them. This increase of income will more than pay the cost of the male birds, even if he had bought one every year instead of one in two years. And there is a fascination in watching the improvement from year to year that cannot attach to the raising of the common fowls.

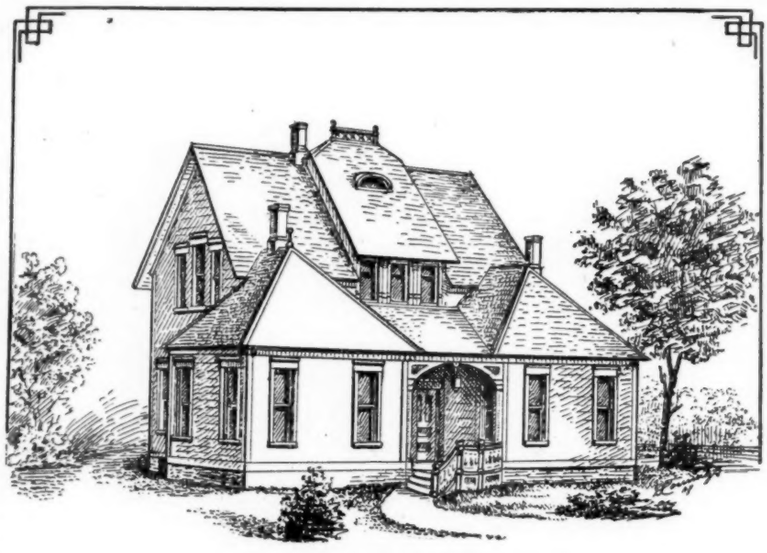


FIG. 1. FRONT VIEW OF RURAL COTTAGE.

MATING LIGHT BRAHMAS.

B. COOK.

The beauty of a Light Brahma is greatly enhanced by the intensity and brilliancy of the black in the hackles and tail. The tendency in breeding is towards a fading out of this color, the brilliant black becoming a dull, rusty brown, and sometimes disappearing altogether, as has been the case in the White Brahmas. To correct this tendency, and especially in mating for the production of fine males, experience has taught that there is a close connection between the preservation of this beautiful black and the color of the underfluff; and males having a bluish gray color on the back, when the feathers are lifted, are selected for breeders. I once selected a Light Brahma cockerel for a gentleman who had experienced great difficulty in preserving the beauty of the hackles in his birds. He declared it to be impossible to breed good hackles in his climate. His birds were, otherwise, very handsome ones, of large size and fine shape. The cockerel selected for him had a good stripe in his hackle and a deep, darkly colored underfluff. I saw the pullets the next winter which had been bred from this male, and they had very handsome hackles, the stripe not only being of good length, but of a very brilliant black. But these dark underfluffed birds may breed some pullets with too much black in the back. Such pullets often make fine hens, for age tends to a loss of color. For pullet breeding I prefer a male that has a good wide black stripe in his hackle, and if the females to which he is to be mated are not deficient in color, with a light under color, either pure white or light bluish white. The female of this variety is lighter than the male in color, and a pure white back is greatly admired by fanciers of Light Brahmas. The flights are usually lighter than those of the male. His ought to be nearly black, while hers may be half white, though if they were solid black and she had a pure white back it would be regarded as a very desirable combination. To sum up, for males secure a cock with dark underfluff; for females, one with light underfluff; and in both cases mate to exhibition females. When the females are deficient in black, use a male, even for pullet breeding, with a dark underfluff.

SHORT FURROWS.

Most people enjoy the music of interest-bearing notes.

He who is behind with his work must always be driven by it.

The toe of your boot is not a good thing to caress your cow with.

The early morning song of the robin has no charms for the indolent man.

The best cooking school for the daughter is the kitchen, where the mother is skilled in the culinary art.

The corner grocery seems to have a corner on a good many lazy farmers whose hedges need trimming.

He who plants a melon patch too near the public highway can scarcely be regarded as a promoter of public morals.

Milch cows should be encouraged to drink plenty of water in warm weather by providing it for them, fresh and cool.

If you should call all things by their right names how many friends do you think you would have among your neighbors.

A CONVENIENT RURAL COTTAGE AT SMALL COST.

D. COMINGS.

A house design, to be acceptable for the country home of a family of about five or six members, should have the exterior modest and unique in appearance, with a symmetrical arrangement of the house, so as to give large, sunny rooms, with plenty of cosy piazza room. The design shown in the illustrations embodies these features. The residence (Fig. 1) is well adapted to a site necessarily near the road, but overlooking a pleasant prospect from the sides and rear (Fig. 2). The hiproofed wings, at either side, seem to guard the domestic life, affording a restful quiet not often obtained in an exposed location, and the high central roof rising above the porch adds dignity to the whole. The construction of this frame cottage is such as lends a character to the house different from a conventionally plain building, and yet it lacks the expensive detail work usually found in an original plan—the framing of the roofs being the most difficult part of the construction, and will readily be understood from a little study of the plans. Entering at the front (Fig. 3), winding steps lead to a square porch, whose curved front affords an extensive view up and down the street; and on summer evenings this is an attractive place, with windows opening out upon it from the two front rooms.

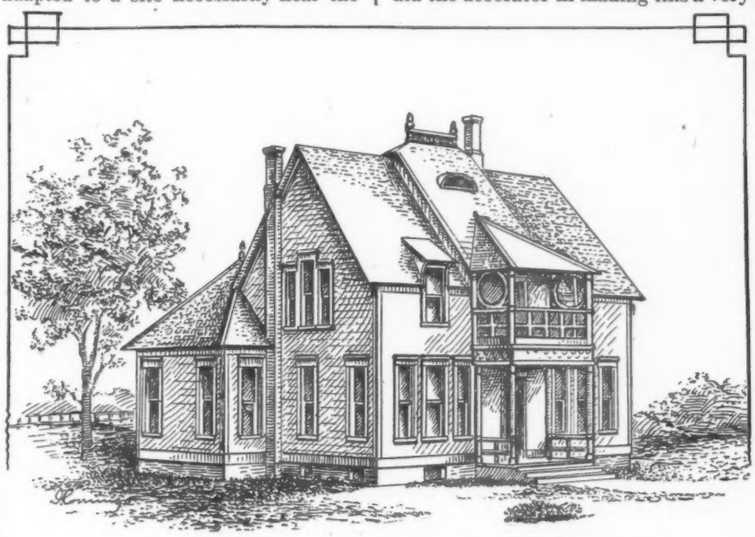


FIG. 2. REAR VIEW OF AN INEXPENSIVE COUNTRY RESIDENCE.

The transverse hall is lighted by a large window at the farther end; at the right of the entrance is a large square parlor, with windows on every side. A mantel with a pleasant chimney corner seat for reading is at the rear, alongside the wide folding doors opening into the dining room; a fireplace is also placed in a corner

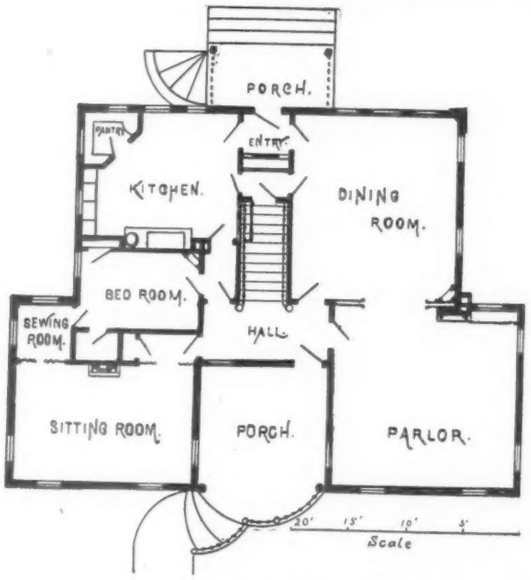


FIG. 3. FIRST FLOOR PLAN.

of this room, which communicates with the outside chimney running up in the angle of the house. A door leads into the front hall, and through an entry access is had from the back porch; while an inside passage, fitted up with china and pantry closets, is lighted from the entry, and separates the dining room from the kitchen and cellar stairs. The kitchen has the conveniences of a range, with hot water boiler upon a broad hearth in a niche at one side, a sink with set tubs near by, and a cupboard with sliding doors opposite, under the stairs. A corner is cut out of this room to provide for a very convenient, light and airy pantry; although it is small, yet with the closet room already spoken of, it is sufficient for the usual needs. A passage between the kitchen and hall isolates it from the front of the house, keeping away steam and odors.

The other wing of the building is occupied by the family rooms, consisting of a sitting room half screened from the hall by a portiere across the recess, which has a coat closet at one end; at the farther corner of the sitting room another portiere shuts off a small sewing room. The symmetry and regularity of the sitting room aid the decorator in making this a very pretty apartment. Between the sewing room and the passage is a bedroom with fireplace, closet and wardrobe. The central feature of the hall is the broad staircase, rising between the partition walls and having a baluster on either side; at the head of the stairs a windowed door opens upon a balcony over the rear porch. Three large chambers surround this hall, with plenty of closet room in each, and chimney connection in every room. There is room enough under the main part of the house for a cellar, and such basement conveniences as are desired. Winding steps outside lead down to a basement entrance beneath the porch in the rear. [The size of all the various apartments may be found by comparing the scale of feet accompanying the first floor plan given in the illustration Fig. 3.]

MILKING IN DARKENED STABLES.

During the summer season, when flies trouble the cows even in the pasture, it will prove a good plan to put the cows in a darkened stable at milking time. If the room be very dark, the flies will leave the cows when passing through the door. Should they be persistent, however, in clinging to the cows, hang a blanket, or

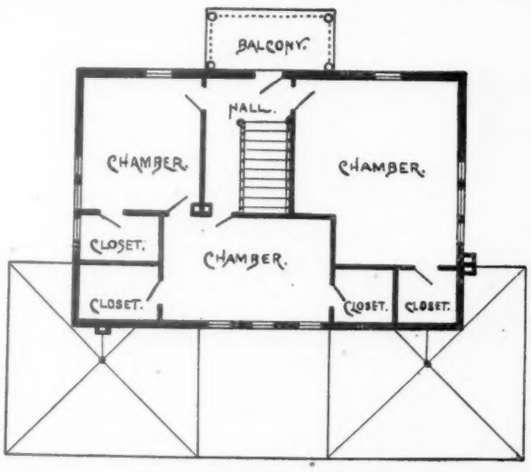


FIG. 4. SECOND FLOOR PLAN.

strips of cloth over the doorway, or even use branches with the leaves on, which will brush and scare the little pests from the animals as they enter, after which the milking can be done with some degree of comfort. It is not necessary that the milking room be provided with stanchions, but any darkened place will answer. The cows soon learn that they can be therein freed from their tormentors, and will gladly seek its seclusion at every opportunity, and, if conveniently located, they would, of their own free will, enter the room at midday, during hot weather, instead of fighting flies and enduring the heat in the open air. During summer, cows, if in good pasture, will not usually graze during the heat of the day, but will stand about in the shade, or lie at some point, chewing the cud. Hence the added benefit of a cool, quiet place during this rest.

PEPPERMINT CULTURE.

JAMES K. REEVE.

It is a curious feature of our agriculture that without any especially apparent reasons certain industries flourish and are almost wholly confined within certain restricted districts. Wayne county, New York, has been famous for its peppermint for half a century, and while there are doubtless many other sections of the United States where the herb could be grown quite as well, its cultivation has never made much headway anywhere else, except in a limited way in the southern part of Michigan. About sixty years ago, some Connecticut farmers, emigrating to Western New York in search of more fertile lands, found the peppermint growing wild in great abundance along the edges of the streams. At home they had already been accustomed to cultivate it in a small way, and to distil the essence, and the fact of its prolific indigenous growth suggested to them the natural adaptability of the soil to its production, and they began to plant and cultivate it.

From that time the industry has steadily grown until now in that county alone there are annually cultivated an average of about six thousand acres, but running occasionally, when high prices stimulate production, up to eight thousand acres. As a great deal of labor is required upon a small area, most of it is grown in small patches, as an adjunct to the general work of the farm instead of being made the principal crop. In this way some two thousand cultivators are engaged in its production, only one of whom, so far as I could learn, had ever gone into it upon a very large scale. This one exception cultivates every year one hundred acres or more, and, of course, makes it the main occupation of the farm. As each acre requires the entire labor of one man for one month, and as the entire crop demands immediate attention at certain times, one must have considerable capital and be certain of plenty available labor when most needed, before he is warranted in entering upon the work to any great extent, and as both product and price are exceedingly variable, farmers ordinarily are not disposed to take the financial risk incident to the cultivation of a large area.

An average yield in Wayne county is about one ton of the wilted—not dried— plants, which will produce about twenty pounds of oil. From this the yield runs down to ten pounds, or less, and has been known to go as high as forty-five pounds of oil per acre. The price within a few years has fluctuated from $1.35 to $5.25 per pound. The cost of production, where an average yield is secured, cannot be less than two dollars per pound, including the rental value, which is ten dollars per acre, uniformly, for good peppermint land. Thus it will be seen that the growers have good reason to discourage any extension of the crop area, and to decry all suggestions that it may be successfully produced elsewhere. I have said above that there is no especially apparent reason why certain industries should cling to certain localities, but it may be that in this case soil adaptability has something to do with it. It is a fact that the average yield here is greater than in any other place where peppermint is extensively cultivated. In Michigan the yield is from eight to twelve pounds of oil per acre, and at Mitcham, in Surrey, the great center in England for the cultivation of medicinal plants and the manufacture of essential oils, the average production is seventeen and one-half pounds. It is probable, however, that if the financial aspect of the industry was more favorable, other localities would speedily be found where the soil, allied to best methods of cultivation, would respond generously to the mint grower.

The prices received by different growers, though dependent somewhat upon their district, depend still more upon the freedom of their mint from weeds. The New York oils bring uniformly more than those produced in Michigan, but there may be great difference in the value of the mint from adjacent farms, depending upon the greater or lesser thoroughness of cultivation. Weeds are the great enemy to success, and the habit of growth of the plant is such that its profitable cultivation is almost impossible upon foul land. Low, rich, mucky land is chosen for it. This is plowed in the spring and then laid off in furrows thirty inches apart. In these the sets, which are portions of old plants, are strewn so thickly that they touch in the rows. This work is done in April, as soon as the ground can be put in proper condition. Cultivation consists in keeping the ground clean until the plants, by tillering, have taken entire possession of it. After that, the only thing that can be done is to weed by hand. The land is generally cropped two, but sometimes three years. After that it becomes so foul that the quality of oil produced would not be good enough to pay for harvesting. The first crop is, in this respect, of course the best of all. The mint ripens when about two and one-half feet high, and is harvested the latter part of August. It is cut with a cradle, raked into cocks, wilted, and then taken to the still, which extracts the oil.

The essential oil of peppermint, like all other vegetable oils, constitutes the odorous and rapid principle of the plant. It is obtained chiefly by distillation, but may be obtained by expression or other means. It is slightly soluble in water, and perfectly so in alcohol or ether. It is so volatile that its adulteration, by any of the fixed oils, may be discovered by very simple means. Apply a drop of it to a sheet of white paper and hold before a fire; if the essential oil is unmixed, it will wholly disappear; but if a fixed oil has been added, a greasy stain will remain. Besides its medicinal uses, peppermint oil enters largely into the manufacture of confectionery, perfumery, and essences and cordials. The fact that we have attained the very highest success in this, even outstripping those who have been engaged in the industry for a century or more, affords good ground for hoping that we may eventually compete successfully with France in the production of all the finer essences and perfumes in which she now holds a monopoly.

FORCING THE EASTER LILY.

EBEN E. REXFORD.

Many complaints come to me, yearly, of failure in the successful cultivation of the Easter Lily (*Lilium Harrisii*), in pots. Some complain that the plants do not bud, others that buds form, but blast when about half developed. In most cases the cause of failure is apparent; the nature of the plant is not understood by the amateur florist. In some instances failure is due to unfavorable conditions in which the plant is grown. I am almost invariably successful in the cultivation of this charming flower, and I grow it in this wise: I generally put three or four good-sized bulbs in a ten-inch pot. I fill the pot about half full of a compost composed of loam, turfy matter, and old cow manure, in about equal parts, adding enough sand to make the whole friable. Before putting any soil in the pot, I am careful to provide for drainage. On top of this first half-potful of compost, I put the bulbs, pressing them down well into the soil, and afterwards adding enough more to just cover them. I then water them well, and set the pots away in a rather cool place, where they are allowed to stand until the plants start into growth. It does not seem to matter much whether the place is a dark or light one, as this plant is not inclined to make top-growth until its roots have made something of a start. As soon as the plants show their head above the soil, I bring the pots into a warmer place, and as fast as the stalks shoot up, add soil to that in the pot until it is full. This is done for the reason that roots are growing out from that stalk, just above the bulb, and in order to give them an opportunity to support the stalk they must be provided with earth in which to grow. I seldom find it necessary to furnish sticks to support the stalks of plants grown in this way. But unless this is done with plants grown from bulbs potted in the usual way—that is, with no soil about them save the little put over the bulbs at the time of planting—the stalks will often break over at their junction with the bulb.

Much depends on the bulbs used. There are several grades always in the market, though thoroughly reliable dealers aim to carry only the best. These are the ones to buy. They may vary in size, but the quality is alike throughout. The most desirable ones are three or four inches across, plump and heavy, the weight showing that they are full of stored-up moisture, which denotes vitality. Shrunken, half-wilted bulbs are worthless. Small bulbs, in good condition, will seldom give more than two or three flowers, while the larger ones will frequently give as many as six, eight, or ten. They cost more, it is true, but they are well worth paying the difference in price. A plant bearing but one flower is beautiful, but when a stalk may be crowned with a great cluster of blossoms the effect is so much finer that one considers the extra money paid for the large bulb well invested. If I could have but one flower for winter use it would be this lily, as with proper care it is sure to bloom well, and all who have seen a fine specimen in bloom will readily admit that there is nothing more beautiful.

The blasting of buds can be traced, almost always, to too high a temperature, when this plant is grown outside the greenhouse. The air of the living room is lacking in that moisture which moderates a temperature that runs above a healthy point, and this dry air, acting in connection with the heat, which is often intense in our ordinary dwelling-houses in winter, checks the development of the buds, and causes them to blast. Frequently the stalks make satisfactory growth, but no buds form—they come "blind" in florists' parlance — and this is generally attributable to dry air.

A CONVENIENCE IN FRUIT GATHERING.

Designs for fruit ladders are legion, some good, some bad, and some indifferent. The quadruple stepladder here illustrated must be classed among the good designs, for obvious reasons. Placed under low, branching trees its use permits one to move about within reach of a large portion of the whole side of a tree, because of its four sides, about which one can freely step. Moreover, when not occupied as "standing ground," the top affords an excellent resting place for the basket. It will be found exceedingly convenient for the home orchard, where one may desire to pick but a basket or two of fruit at a time, and wishes to make a selection of those in the best condition for picking. It should be made strong, but light, so as to be readily moved about.

QUADRUPLE STEPLADDER.

WIRE CABLE FOR CARRYING WATER.

In the mountain regions of Virginia an ingenious contrivance is used to bring water from distant springs to the house. The springs are often at a long distance down very steep hills, but as the water is very pure and good, they are preferred to wells close by, which would have to be deep. The illustration, from sketches by J. Osborn, shows the different parts of this "water telegraph," as it is called. A large post, *a*, is set in the ground near the house. A bent iron rod, *b*, is fastened to the post, and to the upper end of this rod is attached a strong wire, *c*, over which runs an ordinary sash pulley, *i*, which is attached at *h* to carrying arms, *d*, which are so bent that the bucket of water will swing under the pulley. The other end of the wire is attached to a similar post at the spring. To a bale on the pulley is attached a small rope, which is wound upon a windlass at the house, and being unwound allows the bucket to go down hill on the wire, and reach the spring, into which it dips by its own weight and is filled. The windlass is turned, and winding the rope brings the bucket full of water up to the house. A similar contrivance is often used to carry coal and ore from mines down the mountain side, or across gulches.

WATER TELE GRAPH.

ENLARGING A WHEELBARROW'S USEFULNESS.

It is often desirable to wheel away from a lawn or garden, light rubbish, straw, hay, or vines, for which purpose the ordinary wheelbarrow does not give sufficient accommodation. So often is it desired to wheel away light but bulky loads of this sort, that such an arrangement as is shown in the illustration will be found very serviceable. It is simply a light rack frame that can be attached to the barrow in the same way that the ordinary sides are attached, the addition of a couple of sockets near the handles being the only necessary addition to the barrow in order to accommodate the rack. The construction is so plainly shown in the sketch that added explanation is not needed.

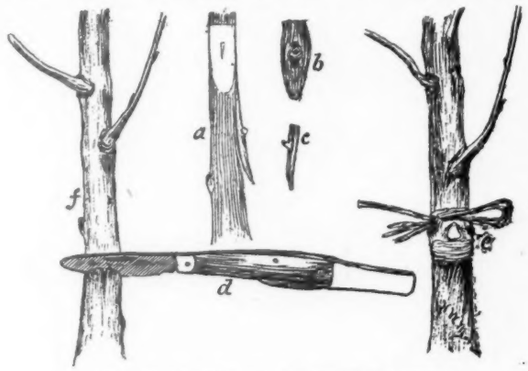
WHEELBARROW WITH RACK FRAME.

Beautiful Native Shrubs.—But few people think of the great number of native flowering trees and shrubs which abound in nearly every State and county, and the use that might be made of them in the decoration and ornamentation of the home grounds. The common dogwood, the Juneberry or shad-blow, the mountain laurel, the pinkster or wild azalea, the sumac with its gorgeous autumn foliage, the basswood, and many others, are so common as to excite but little notice, yet they are as handsome and hardier than many foreign trees and shrubs that we are all anxious to have and which cost considerable money. A handsome shrub should be marked with a stick, stone, or white rag, so that it can be easily distinguished and transplanted to the home grounds at the proper time. Ferns, lady's slippers and other orchids, and many flowering plants which come up in the fields and woods may be transplanted.

BUDDING PEACH TREES.

HERBERT W. MUMFORD, MICHIGAN.

The necessary materials for budding are the seedling stocks, bud sticks or cions cut from trees of improved varieties, a budding knife, raffia (the epidermis of the leaves of one of the palms), and yarn, or the bast layer of basswood bark to bind on the buds. If but little budding is to be done, a sharp pocket knife will serve the purpose of a budding knife very well. Usually a number of seedling stocks come up by chance about every farm home, but should a larger number be desired it is well to secure pits taken from seedlings of natural fruits. The pits should be first subjected to the action of frost in order to secure prompt germination. This process is known among nursery growers as "stratifying the seed." The seed is frequently planted in the spring before it sprouts, by scattering the pits and covering them with light soil to a depth of about two inches, following with the roller or other tool to firm the soil. The young stocks should be cultivated often to secure an even and vigorous growth; especially is this necessary in dry seasons.



OBJECT LESSONS IN BUDDING PEACHES.

These seedling stocks often get a half inch in diameter by September of the first season, and are then of a good size for budding. Budding should, as a rule, be done two weeks before the growth stops; a favorable time is during the latter part of August and the first half of September. Good results have, however, been obtained by budding as late as October. Buds from bearing trees are most reliable, yet buds taken from younger trees are preferable, being more easily obtained and more vigorous. The buds from near the upper or lower end of the cion should not be used. Care should be taken to select only healthy, plump, and well-ripened buds. The leaves should be promptly removed from the cions as soon as cut, leaving only about one-quarter of the leaf-stem as a convenient handle to use in inserting the buds.

A T-shaped cut is made in the bark of the seedling stock, about three or four inches from the ground, taking care not to injure the bark more than is absolutely necessary. Workers differ as to their method of making this cut, but it is of little consequence whether the horizontal cut is first made or the vertical one. In either case the insertion should be made so as to loosen the edges of the bark in order to easily slip in the freshly cut bud. In cutting the bud take the bud stick in the left hand, resting it on the forefinger, with the upper end toward the body. The knife should be inserted a half-inch, or a little less, below the bud, and a cut is then made under the bud and deep enough to take off with the bud a thin shaving of wood, extending about a half inch above the bud. The knife is then taken out, and the bud severed from the cion by a straight, horizontal cut. Budders are about equally divided as regards the question of removing the wood from the bud. The bud is now ready to be placed in the seedling. Take the leaf stalk—left on the bud for this purpose—between the thumb and forefinger of the right hand and insert it in the cut in the bark of the stock, pushing it down until the upper edge of the bud is slightly below the horizontal cut of the stock. The stock should now be wrapped snugly with raffia, two to four times around the stock below the bud, and about three

times above it. Unless this is thoroughly done the air is not excluded and the buds dry out so that union with the stock cannot take place. After two or three weeks the bands should be cut on all stocks where the buds have taken. This is generally all the precaution necessary to observe the first year. In the spring the stocks should be cut back with a slanting cut, of about a slope of forty-five degrees, and commencing on the opposite side from the bud, and about half an inch above it. This completes the operation, except that all suckers which start up from the stub should be removed. If the trees do well they will be ready for planting in the orchard by fall or the following spring. [The illustration on the preceding page gives a clear idea of the entire budding process. At *a* is seen a cion, at *b* and *c* buds, at *d* a budding knife, at *e* a bud inserted and wrapped, and at *f* the seedling stock.]

JAPANESE GARDENING WITH DWARFED TREES.

EDGAR SANDERS.

A number of the curious, dwarfed trees so much used in Japanese garden work were exhibited at the World's Columbian Exposition, and Japanese gardeners, sent over by the royal commission, laid out representative gardens and exemplified their methods of using such material. The style of gardening, illustrated by them in the Horticultural Building, was a miniature garden scene, represented by an old-fashioned well, from which issued a liberal stream of water, that was made to meander between rocks, hills, under bridges, and other landscape features, as a miniature representation of natural scenery. To heighten the effect, dwarfed trees suitable to the location were used. However poor a man in Japan may be, and however small a patch of land he may have, he strives to reserve some small place to lay out his traditional garden. Parcels of land that in America would be relegated to the uses of a back yard or rubbish heap, would, to him, be space enough even for a comprehensive garden scene. Japanese trees only a few feet high, yet perhaps half a century or more old, are dwarfed and managed so that, while in the best of health and growing freely, they do not add as many inches to the growth each year as the same trees would in feet if not trained and subjected to the painstaking Japanese dwarfing process.

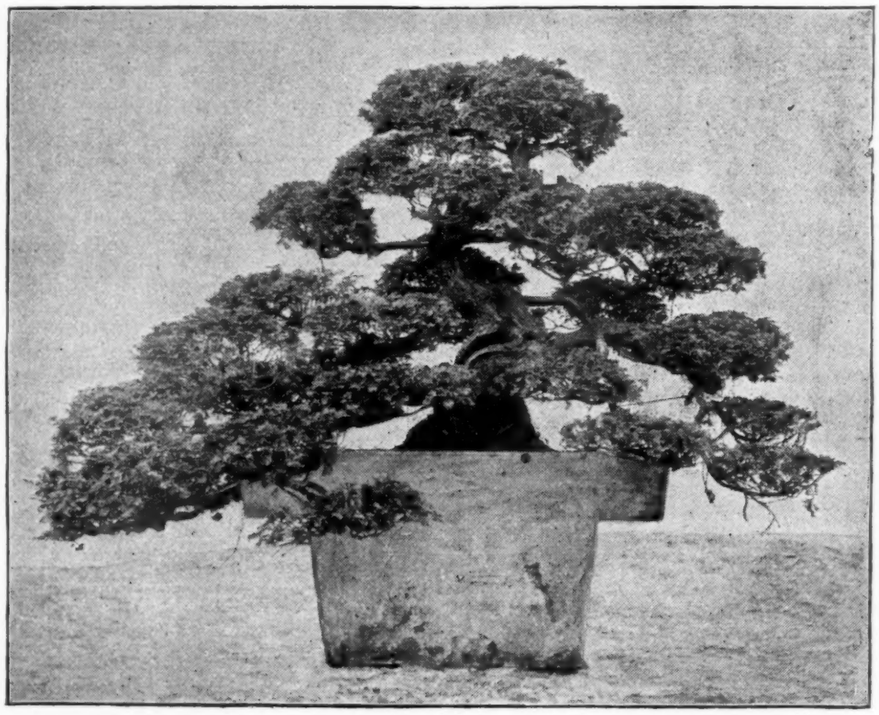


Fig. 1. A DWARFED JAPANESE CONIFER.

The refined taste of the Japanese people admires natural forms or views. Except with the very wealthy, who can command space enough for more enlarged scope, the Japanese consider their gardens but miniatures or abridgements of nature. The artificial mountains, rivers, ponds and forests which may surround the palaces, residences and country seats, have been, and are, made as imitations of natural scenery. Even though the designs are drawn by experienced gardeners, they are arranged according to general modes of construction.

There are three main styles of gardens in Japan. One may consist of miniature mountains, valleys, ponds and rivers; another an imitation of an inland sea, seashore, riverside and plain; while a third is a solitary valley, with forests, glens, and other lonely surroundings. Even these are again subdivided, each into three other groups, with distinguishing characteristics. In the Japanese garden at Chicago the mountains were not so steep as in other styles, while such plants as were used to express the main idea were not limited as to number.

The Japanese do not attempt the dwarfing of a large variety of trees, but select those of distinct character, which dwarf readily. The pretty foliaged *Chamæcyparis obtusa*, grafted on *C. Lobbii*, is a favorite, which they use freely as small shrubs, growing but a few inches high, perhaps in a bit of rock, or as a more pretentious specimen with gnarly old stem and spreading branches, that must have been a lifetime in growing to its three or four feet of height. Of the pines, *Pinus densiflora*, *P. parviflora* and *P. Thunbergii*, are popular for dwarfing. These are made scrubby in appearance. The *Sterculia platanifolia* is much used, as is the Chinese parasol plant, *Sciadopitys verticillata*, a member of the Pine Family, with spreading whorls of long leaves, very unique in appearance. The running *Juniperus littoralis*, the dwarf Japan *J. chinensis*, the *Azalea amœna*, the red-berried *Ardisia crenulata*, are also dwarfed.

The ornamental maples, grafted on gnarled old trunks, are another Japanese feature. The moutan and other peonies, are often noticed, not less so the iris. The useful Rhaphis palm is employed, and curiously grown specimens of the sago palms. Greenhouses are little used. Flowering cherries, and other similar plants, are forced in cellars rather than greenhouses, and when in flower are highly prized. The chrysanthemum, of course, is grown in vast quantities, but not finished up in greenhouses, as with us. In their work, the Japanese landscape gardeners seem in no hurry, but keep plodding on until the result aimed at is produced. Everything is neat and prim, and fitness of plants to positions studied with marked effect. Even a space of a dozen square feet is treated in imitation of one or another of their styles of gardening. The trees suitable for the miniature garden and the whole landscape, with its imitation hills, streams and forests are often built on a movable frame so that it is quite possible for the Japanese in this way to move his garden at each change of residence as we would move a window garden. [A dwarfed conifer is seen in Fig. 1, and a view of the Japanese exhibit at the World's Columbian Exposition is shown in Fig. 2 of our illustrations, which were engraved from original photographs.]

POINTERS.

A piece of newly cleared land can hardly be put to better use than to grow a potato crop. At least this is what the potato growers of Aroostook county, Maine, think, and they are pretty successful with this specialty.

Out of nothing, nothing comes. If you do not feed the soil it will not long feed you. One year out of three the main attention should be given to a crop that will recuperate the land. This may be a crop that will easily repay all the cost of producing it, and leave its entire manurial value as the profit, maintaining the fertility.

TREES AS SOIL IMPROVERS.

H. NICHOLAS JARCHOW.

There are many farms which inclose some infertile plots that do not repay the expense of field culture. Such plots should be planted with forest trees, of which a mixture of pines and birches even with a small addition of oaks, would often give satisfactory results. On grounds which are not liable to be soon overrun with weeds and grasses, pines and birches, are most easily and cheaply raised by broadcast seeding, requiring little or no after-culture, and giving, by thinning during the first and second decade of their growth, a sufficient revenue to pay for all cost and labor.

The principal advantage of tree growth to land consists of the enrichment and change of soil during the growing period of the trees. The growing forest needs no manuring. While some cultivated plants feed upon the contents of the atmosphere, and the majority draw still more heavily upon the material forming the soil, so much so as to exhaust it in the course of time unless restored by the application of manure. The forest-clad soil is every year increased and improved, not only by the fallen leaves and small twigs, which soon decay, but also by the action of the deeply penetrating roots of the trees. The roots open the subsoil to the influence of the atmosphere, and cause by chemical agency the conversion of coarse earthy materials into available plant food.

In the growing of a forest, all circumstances combine to increase and to improve the soil. The trees draw upon the mineral resources of the soil, and especially upon those of the subsoil, which the usually cultivated plants never or seldom reach. The beneficial effect of forest growth upon poor soil has long been known in Europe, and has been made instrumental in the improvement of light soils. The most conspicuous and remarkable case of such an improvement is found in France, on the sandy Landes of Gascony and of the Gironde. These Landes were sand-wastes, containing several millions of acres of poor, sandy land, from two to three feet deep, with shifting sand at the top, and resting upon an impermeable layer of hardpan. Fifty years ago the Landes were unable to produce anything but inferior grasses. At the present time they are covered either with splendid pine and oak forests or with grain-bearing fields. This latter feature was only attained by the introduction of a rotation, in which tree growth played a prominent part. The farms are all kept in forest, and after they have thus been brought into a fertile state a part of the woodland is cut down, made arable, and cultivated for a period of from ten to twelve years.

All worn-out land in the exhausted area is again planted with forest trees, and after the lapse of about fifteen years again turned over to cultivation. In this way the barren lands of Europe are not only made fertile, but kept up in fertility by scientific forest culture. Happily we are not yet compelled to press all of our sandy lands into the service of agriculture, but nevertheless it would be an evidence of thrift if something were done in order to render useful the many waste places which our farms inclose in the shape of sand barrens, or bare, steep hills, and which are but eyesores to the industrious man. The recent census shows that since 1880, our farms have greatly decreased their former abundance of timber and lumber, whereas the demand for it has vastly increased. It would, therefore, be a wise policy if our farmers would plant the unremunerative poor fields on their farms with forest trees. Some one may say that the period of years required for the growth of forest trees is a long time to await the fruits of our labors. But should we not live for our children? The full value of this improvement can just as readily be realized as any of the other permanent farm improvements, for, even should the farm be sold, the growing wood will certainly take rank with the other improvements as an element of value, and will bring its full price, while the beauty and the comfort of the trees adds to the enjoyment.

Fig. 2. VIEW OF THE JAPANESE GARDEN EXHIBIT AT THE COLUMBIAN EXPOSITION.

HOUSEHOLD

Small Economies.

ELLA F. MOSBY.

My own early experiences in housekeeping were on a farm that was practically five miles from a lemon, and occasionally I would find myself with but meager resources for flavoring desserts. One winter a box of fine oranges was sent to us by a friend in Florida, and it occurred to me that it was a pity not to utilize the beautiful and fragrant orange peel, or to let it lose color and freshness by drying into hard bits. My first experiment in preserving it failed, as I neglected to soak the peel and it tasted decidedly bitter. The next time I prepared a jar of salt and water and dropped into it the rinds, neatly cut, as we ate the oranges. Then when we had enough, I soaked them in water to remove the taste of salt, and preserved them. A pound of sugar to a pound of peel is a very good proportion when you want the syrup to candy, and wish the delicious candied peel for confections, but otherwise less sugar may be used.

Later on I discovered that if the seed were carefully removed, the rind might be soaked in boiling water, and this would soften it, so that you need not put it in the syrup until nearly done. The candied peel is very pretty cut in long, thin strips. I found my small economy of the greatest use. Plain rice or bread puddings became dainty dishes when flavored with the preserved orange peel, and no preserves in my closet were greater favorites at tea or lunch.

Oranges and lemons are delicious, when preserved together in the proportion of two oranges to one lemon. The fruit is sliced and every seed removed. Prepare your lemons first, as they require several days' soaking, first in brine and then in clear water, changing the water twice a day with the second soaking. The sliced oranges will do very well soaked a day in water that is boiling when poured over them. The lemons also must be put in boiling water until the rind is soft. Make a syrup—a pound of sugar to a pound of fruit—and put in two layers of oranges and one of lemons. Boil several hours slowly. Take out the fruit, and let the syrup boil until quite thick, and replace the fruit. This is a delicious preserve, but troublesome. If you are making any dessert of apples, the juice and grated rind of a fresh orange gives a delightful flavor, richer, I think, than the more frequently used lemon.

What Women Can Do.

ALICE CHITTENDEN.

Every editor of a large paper, daily, weekly or monthly, is frequently in receipt of letters from women asking how they can earn money to add to the limited family income. Fifty years ago there were but three or four respectable avenues by which woman might earn her bread. Recently I heard a public orator say that, to-day, there are four hundred and seventeen, and, if he had looked closely, he might have made it an even four hundred and twenty. Perhaps it does not help women much to know what others have done, and yet it may give some one an idea which she would otherwise not have had, of a way in which she, too, may make her mark.

There is a great deal of undeveloped artistic talent among women. Last summer I saw a letter written by a girl friend to a neighbor, the margins of which were cleverly illustrated. I sent the young woman an article to illustrate; she caught the idea so deftly and did the work so well, although she had never taken a lesson, that to-day, after a course at the School of Manual Training for Women, she is receiving a good salary on an illustrated city daily. There is a large field to-day for such work. Consider for a moment that the fashion publications and pattern books, and their name is legion, have each to employ one or many artists. Carpets and wall papers, oilcloths, cretonnes, draperies of various kinds and dress goods as well, must have designers.

In the Chamber of Commerce building at Cincinnati, there is a restaurant conducted by three Scotch women—upon strictly temperance principles at that—who clear from $3,000 to $5,000 each annually. Georgia has a female mail carrier who is only twenty-two years old. She makes a forty-mile route three times a week on her pony, and manages a large farm as well. One of the best orchestra leaders in New Orleans is a woman.

There is in New York city a blacksmith shop managed entirely by women. The father died while the children were young and his wife took charge of the establishment and had her girls instructed in the art of horse shoeing and everything pertaining to the business. During the racing season they open a branch at Monmouth, New Jersey. Many of the largest greenhouses in Astoria, Long Island, are owned by women. There is a young woman in New York who is a paper hanger, and another in Virginia who breaks and trains horses. There are female drug clerks and the proprietor of a drug store in Philadelphia is a young woman.

The largest type-writing business in the world is conducted by two sisters. The eldest of these took lessons in stenography for amusement, but became so interested in it that she went in a large law office, where she became very proficient. When her parents died she taught her sister and opened a school, and to-day the two sisters have five offices and one school, and employ sixty stenographers and typewriters. There are most successful advertising agents and drummers among the weaker sex, but all women engaged in business who are prosperous, are the women who mean business. Those who do not, make their employment merely a stepping stone to marriage. To be a good wife and mother is undoubtedly woman's noblest as well as happiest avocation, but all women do not marry, and there are, among those who do, many who draw blanks. Let such feel that all honest pursuits are open to them, and when they enter the lists let their motto be "Not slothful in business."

A New Amusement.

Everybody has her "fad," and just now it is everybody's fad to give parties at which the guests are expected to talk about and illustrate their own particular fads. At a recent gathering of this kind one young woman brought a most unique collection of stick pins; another of souvenir spoons; a third of fans; a fourth of autographs. It is really an interesting and entertaining way of spending the evening, for one's "fad" may lean to science and pressed flowers, seaweeds, seashells, or dried bugs and beetles, all of which, if talked about knowingly by one who has a love for such things, are means of enlarging one's knowledge. Even the young woman with a collection of fancy ribbons was not looked on coldly, for they were extremely pretty and rare bits. The young man with a "fad" for neckties was advised by his best friend to stifle his taste in this direction and see if it would not send a side shoot in some worthier one. A "stamp fiend" had a crowd around his collection. The "fad" of the hostess happened to be odd and pretty cups and saucers, from which, later in the evening, the guests all sipped their chocolate.

Children's Table Manners.

PRUDENCE RHODES.

The fashion of allowing servants to oversee children's meals is responsible for the formation of bad habits in early life which no amount of after correction is sometimes sufficient to counteract. I have seen the eighteen-year-old son of a United States Senator spread a whole slice of bread at a time, and bite from it balanced in his hand. The manners of a somewhat younger boy of a prominent writer would disgrace the son of a mechanic. While you have no right to inflict the company of a two-year-old baby upon your guests at the table, in order that he may be an infliction to his own friends later in life, it will be well to begin forming his table manners as early as he can be taught to handle his knife and fork.

That it is possible to do this except at much sacrifice of your own personal comfort I do not assert. Where the mother must look after the habits of one or more young children at the table, the father should take upon himself the duties of carver and helper. If there are older brothers and sisters in the family let them help to bear the burdens, and so conduce to the general peace. I have in mind a family, where the eldest brother sits with a younger brother on either side of him, aiding, correcting, teaching and guiding them patiently and unobtrusively, so that conversation is scarcely interrupted, while the mother is left to take her dinner in such ease and comfort as otherwise would not be possible. One can scarcely overestimate what a help in society graceful table manners are, nor, indeed, what a hindrance bad manners may prove. The graceful and dainty way in which one eats soup, handles a fork or breaks his bread, stamps one as having been used to good society or to the opposite; rather it places the stamp of his breeding upon him, for I have seen a celebrated musician, whose table manners were most reprehensible, but who was yet used to the best society. Much is often, however, forgiven to genius, which would not be tolerated in an ordinary person.

Treatment of Floors.

MAY SILVERS.

A wealthy gentleman was once taking me through his new house, which had cost probably $40,000. The floors were made of hard wood and elegant rugs were spread around in profusion, but wherever the floor was exposed there was also to be seen a coating of shellac peeling off in spots. He explained that the floors had been badly treated and had to be done over. The process of finishing a floor, given good lumber, is a very simple one. One of the very best preservatives, which also gives a good finish, is a thick coating of hot boiled linseed oil. Have the floor very dry and clean; heat the oil in a vessel placed within another of boiling water. Oil is very inflammable and the least drop spilled directly upon the stove would instantly ignite, therefore, the greatest care must be taken in using it. When all is ready begin at the corner of the room farthest from the door and apply it with a wide, flat brush, covered with many thicknesses of woolen cloth and with a long handle attached. Work rapidly and apply lengthwise of the boards. It will sink in almost as quickly as it is applied, and it may have a second coat as soon as the first has disappeared. Leave the room to dry for several hours. With a greater outlay of time and strength an even better floor can be made. Melt four pounds of yellow beeswax in a gallon of oil; rub the floor with hot irons until as warm as it can be made; apply the oil and wax when at the boiling point, and rub with hot irons, repeating the application until the wood will absorb no more. This is a fine finish for stairs and halls. It will not need renewing for years, and will not be injured by dampness or quickly show use. To darken this stain, add finely ground umber. The greatest precaution must be taken not to spill the hot oil and wax upon the stove.

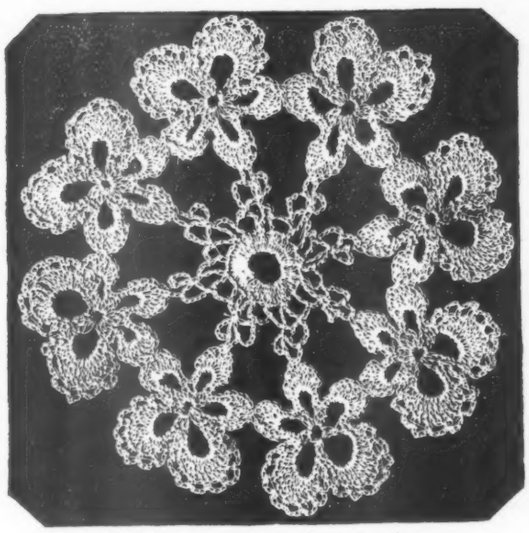
Pansies for a Bride.

E. M. LUCAS.

It was a California bride who was the happy recipient of a most useful and beautiful gift consisting of a spread, dressing table scarf, splasher, cushion, and two scent sachets of crocheted, pansy-shaped rosettes lined with violet silk. "It was picked-up work, made during spare moments, and therefore not tedious," said the ingenious woman, whose industrious fingers had fashioned these dainty articles.

The spread for the bed—made long enough to extend over the pillows—was crocheted of soft, twilled crochet cotton, pure white in color. The design was pansies arranged to form rosettes, the whole being lined with a delicate violet-tinted silk. The scarf for the dressing table was of the violet silk; underlaid was a pad of cheese cloth, interlined with a thin layer of cotton batting, liberally sprinkled with violet sachet powder. On each end of the scarf sixteen rosettes were arranged diamond-wise. From the lower half of the diamond the silk was cut into scallops, following the outline of each pansy, and neatly hemmed on the under side. The splasher was crocheted with the same fine white cotton as the rosettes on the scarf. The first row consisted of six rosettes, the second row of five rosettes; and so alternating to

the depth of four rows. It was lined with the silk and cut into scallops around the edges, following the outlines of the pansies. Bows of white ribbon were placed on the corners. The pincushion was square, and of ample proportions. It was made of the violet-hued silk, scented delicately with the violet powder. A puffing of white satin was around the edges, the joining being neatly covered with a tiny silver cord, having trifoliate loops at the corners. On the center of the cushion is placed one rosette crocheted with silk. Two large scent sachets, made like saddle bags, of the violet silk, with a row of the rosettes down the



PANSY PATTERN.

center and fastened with white satin bows completed this lovely gift. The directions for crocheting this unique and original design are as follows: Commence in the center with a chain of fourteen forming into a loop with a single crochet.

First round — Two chain to represent treble, sixty-three treble in loop, one single crochet on two chain.

Second round — Star three chain, miss three stitches, one loop treble in fourth stitch; seven chain, turn and on this chain miss six, one treble in seventh; six chain, one treble in same place, six chain, one treble in same place; thus forming a little leaf of three loops. One loop treble in same stitch, the other loop treble was worked in; three chain, miss three stitches, one treble in fourth. Repeat from star seven times and fasten off neatly and securely. This completes the center piece, to which is attached the pansies.

For a pansy, work a chain of six and form into a loop with a single crochet.

First round—Two chain to represent treble, ten chain, three treble, ten chain, three treble, eight chain, three treble, eight chain, three treble, eight chain, two treble, all in loop, fasten with a single crochet on two chain. This forms two large and three small loops, each divided by three trebles.

Second round—In first loop of ten chain work star three single crochet, one chain, three treble, seven loop treble, three treble, one chain, three single crochet, and one single crochet in center of three trebles, dividing the loops. Repeat from star once. In loop of eight chain work double star three single crochet, one chain, two treble, five loop treble, two treble, one chain, three single crochet, and one single crochet in center of three trebles, double star. In next loop of eight chain work three single crochet, one chain, two treble, three loop treble; join in the middle loop of the little leaf of the center piece. In same eight chain work two loop treble, two treble, one chain, three single crochet, one single crochet in center of three trebles, and in next eight chain repeat from double star to double star. This forms the five petals of a pansy, two at the top, and three at the bottom. All around the two larger petals work four chains, miss one stitch, one single crochet in next, continue around the two petals. Fasten off neatly. Work seven more pansies in the same manner, always joining to the center piece, and join the third small petal to its neighbor of the next pansy. This will form a rosette of eight pansies. The rosettes are joined by two large petals of each pansy being joined to the two large petals of the next pansy. After working the rosettes it is very easy to see how they are joined. These rosettes are also very pretty for covers of sofa cushions.

Homemade Rug.

ELLA ROCKWOOD.

This rug is made of rags and is woven in two breadths, each a yard wide and three yards long. Half a yard on each end of the breadths is striped in colors, red, blue, yellow and brown, with a narrow stripe of white and a wider one of black at each side. The rags for the center of the breadths are sewed "hit and miss" as weavers say, but the rags must be nearly new and strong so as to wear well. For the two breadths, nine pounds of rags were required — six of hit and miss, three for the stripe. The warp was furnished by the weaver, and is not solid like a carpet, but six threads of warp and then a space — "basket weave" I think it is called. The cost of weaving will vary somewhat according to locality; this one cost one dollar and twenty cents, including warp. No coloring was necessary except a little yellow, which was done with diamond dyes. The other colors were the blue of old overalls, washed perfectly clean; the red of cast-off underwear, the brown of an old dress skirt, and black pieces left from a number of black dresses. Only a small ball of each color is required, according to width of stripe, but it is best to have them of different widths, more of some colors than others. This, of course, can be made to suit individual tastes.

Mending Kitchen Utensils.

Many tin or galvanized iron pails, brass, iron or porcelain kettles and wash boilers, are each year laid aside as useless because they have a hole in them that cannot be easily mended by the usual method of soldering. There is a simple plan of doing this work that is applicable for stopping holes in the utensils named from an eighth to nearly half an inch in diameter. First, draw into the orifice a strip of cloth that has been folded several times. If possible make this quite firm, then sharpen a piece of pine or other soft wood and drive this firmly through the center of the hole. With a sharp knife cut both the cloth and stick off to within a quarter of an inch upon each side. Dampen both sides, hold a solid substance against one side, and then strike the opposite side of the plug with a hammer to crush it and make it rough. If the vessel contains any liquid it may be made to boil over the hottest fire without burning out the plug. The driven plug prevents all liability from leaking as it fits more snugly than a cloth alone could be drawn.

A Pretty Rustic Painting.

BETH DAY.

An odd, but pretty ornament to place on a bracket, or on a tiny easel, may be made from one of the large shelf-like fungi, usually called punk, and found growing on decaying stumps and logs. These fungi are of different sizes, and some have very delicate textures and colors.

Choose a fungus the under side of which is of a white, cream, or tan color, and with a shart penknife remove all pieces of decaying wood, dirt and bits of moss. Paint upon what has been the under side of the fungus, a spray of flowers, or a tiny landscape. Glue upon the fungus a small spray of autumn leaves, with one or two very small pressed fern fronds. Or use a scrap picture of a cottage or castle, or old ruin surrounded by trees and shrubs, the latter made from bits of fern, dried grasses, sea moss, or dainty bits of gray, green or brown lichens gathered from the woods.

The fungus will be the more effective as rustic decoration if the easel on which it is placed is made of mossy twigs. [See engraving]. By squaring the fungi slightly on the broken side and giving them a coat or two of varnish, they may be fastened to the wall, and without other ornamentation, serve as brackets. The more richly-colored ones may be stood on end as shelf ornaments.

Food Preservation.

W. W. MEECH.

Sour pickles are made from various kinds of wholesome vegetables and a variety of tender fruits preserved in cider or wine vinegar, and flavored with a variety of spices. If properly made and judiciously used, they are agreeable additions to other foods, although generally regarded as condiments or appetizers only.

Pickles for immediate use are successfully made by simply soaking the various fruits and vegetables in good vinegar until they are entirely saturated with it. For longer keeping, soak in strong brine for a few days until their natural juices are drawn out; then soak in water to draw out the salt. Soft vegetables, like tomatoes and mushrooms, should have the vinegar poured over them cold; for cucumbers, cabbages, and walnuts, pour over the vinegar when brought to the boiling point. In either case, flavor by mixing the spices

ORNAMENTED POLYPORUS FUNGUS.

with the cold vinegar, or by boiling them in it if it is to be used hot. Cloves, ginger, mace, mustard and black ginger are the spices generally used. To preserve the natural green of gherkins, for instance, steep in the vinegar to be used, such leaves as spinach, cabbage or parsley, but as this requires time and patience, a speedier method, followed by many commercial establishments, is to boil the vinegar in copper vessels and thus form acetate of copper, but this is most reprehensible and dangerous. Red beets and red cabbages make beautiful pickles. The latter, with slices of Spanish onions, make the celebrated Spanish pickles.

An artistic mixture of cauliflowers, cucumbers, silver onions, snap beans, nasturtium seeds and walnuts makes very handsome jars. Green plums, scalded in vinegar, are called "mock olives."

PRETTY SOFA PILLOW.

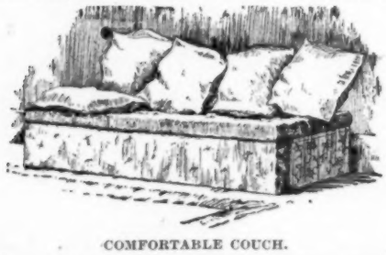
They must be kept hermetically sealed. Pickles that are in danger of becoming too soft are hardened by the addition of alum to the vinegar. Mold is prevented by the addition of horse-radish root or leaves. If a covering of mold forms on top of the vinegar, it should be removed and the vinegar reheated and poured over, or, better still, fresh vinegar used. Always keep the pickles in stone or glass jars. Cucumbers, string beans and walnuts should be pickled in July; martynias in July and August; onions and peppers in August; tomatoes in August and later; cabbage, cauliflower and nasturtiums in September and later, and celery in October.

In Blue and Rose.

The very pretty sofa pillow shown in our illustration, is made of two pieces each of old rose and pale blue figured India silk, that having an old rose ground being figured in blue, and that with a blue ground figured in old rose. Cut four diamonds with the lower points somewhat shortened, and sew them together, as seen in the sketch. Finish in the center with a rosette made of a double frill of the old rose silk, and edge with a heavy cord of the same. The obverse side can be made of plain silk. Figured sateens or cretonnes of contrasting colors will make a less expensive and perhaps more serviceable pillow. Or, make the light pieces of pongee, using black India silk of a good quality for the contrasting pieces; embroider the latter with Japanese gilt tinsel and edge with a yellow silk cord. Get the washable tinsel, and this cover may go to the laundry, which is quite an important consideration where pillows are to be used and not merely looked at.

A Folding Couch.

The illustration shows a homemade couch that is also capable of being turned into a "sofa bed,"

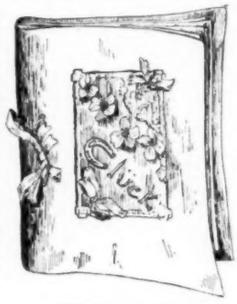


COMFORTABLE COUCH.

when desired. It is a rectangular box covered with any material that may be desired. The cushion on top is made separate from the body of couch, while the front of the box has a stout leaf, heavily hinged at the top, which ordinarily is folded down, as shown. This "leaf" is upholstered to match the cushion, and when raised to a horizontal position and two legs inserted under it, there is all in readiness a wide and very comfortable bed. When this front is raised, the cushion is, of course, moved back a little. The main body of the couch should be twenty-eight or thirty inches wide, without back or arms, these being supplied by an abundance of cushions.

A Homemade Booklet.

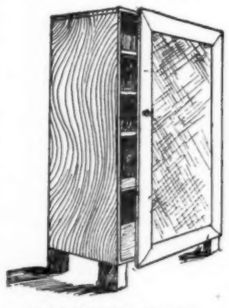
The little book shown in the accompanying illustration can be made at home, and will be as pretty and dainty as any purchased book could be, besides having the additional recommendation of being constructed with one's own fingers and stitches. The poem may be original or selected from Whittier or some other favorite poet, and may be printed upon the type-writer or written in one's own hand-writing. Heavy, unruled paper, with a rough surface, should be chosen for the pages. The cover is of celluloid, and may be of white or some delicate tint. It is perfectly plain on the edges, and has eyelet holes at the back, which extend through all the pages within. A ribbon passed into these holes forms all the "binding" needed, and is tied in a careless bow on the front cover. A dainty Christmas or birthday card is fastened to the celluloid with tiny bows of baby ribbon at alternate corners. If one is gifted with his brush or pen, the card is doubly pretty if ornamented with an original design—a bit of a landscape in sepia or water-colors, or a cluster of flowers dropped upon it. In this case, the greeting will be in original lettering,—"Merrie Christmas!" or "A Glad Birthday!" or the beautiful German word, "Glück," for well wishing. In the latter case, to follow out the idea and give it double significance, the capital G may be a horseshoe, and the following letters constructed of horseshoe nails, as shown in the illustration.



A PRETTY PRESENT.

A Ventilated Closet.

The closet shown in the accompanying illustration is portable, and can be used as a storage for milk or food in whatever part of the house desired—in the kitchen, in winter, when food insists upon freezing anywhere else, and in the cellar during the summer. Its door, which consists of a frame covered with cheesecloth or wire mosquito netting, provides the protection necessary, and, at the same time, admits the air that is so desirable. The netting admits more air and the cheesecloth keeps out more dust, so both mediums have their recommendations and their disadvantages.



VENTILATED CLOSET.

Slip for Sofa Pillow.

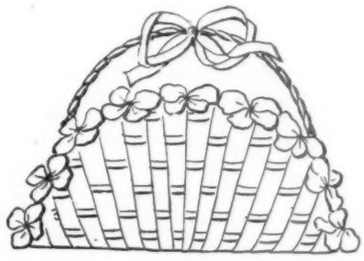
A serviceable, quickly made and easily laundried pillow slip is here illustrated. The idea can be carried out in almost any wash material; cream or white cotton duck at twelve and a half cents a yard will make one as dainty as more expensive material. If you do not wish to spend much time in the making, a pretty pattern of sateen or a couple of bandanna handkerchiefs will do away with the embroidery. Cut the slip six inches larger than the pillow it is to cover, turn the edges in, over-hand them together, and buttonhole stitch them with a contrasting color. A row of stitching, designating the size of the cushion, forms the pocket for it. This has an

SERVICEABLE SOFA PILLOW SLIP.

opening on the under side, fastened together with buttons and buttonholes, so that the cushion can be readily removed. The slip described can be elaborated; finely buttonholed, scallops or points on the edge, will, of course, add to its beauty. Narrow cotton ball or tassel fringe as a finish, is effective also.

Receptacle for Dust Cloth.

A unique device for concealing a dust cloth is here portrayed, in the form of a basket to be suspended on the wall or a door knob. To make one you will need a round piece of "Art linen" or duck, twelve inches in diameter. Draw a border of blossoms around this, fold it together and mark the lines as seen here to imitate a basket; these lines are done in the stem or outline stitch, and the border in an irregular buttonhole stitch. It is then laundered very stiff, folded together, and handles sewed on it of heavy linen cord. The embroidery is done in linen floss—shaded pink for the flower border, and straw color for the basket. A bow of pink ribbon is tied on the handle.



DUST CLOTH HOLDER.

A Convenient Table.

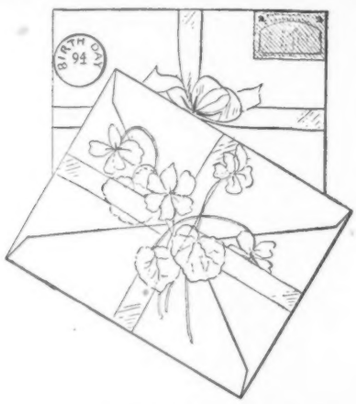
The cut herewith shows a table that some son or father might well undertake to make for the mother of the family. The construction is simple, and the conveniences to be thus secured for the sewer are many. Whitewood is the best material for such a purpose, as it is easily worked, and is comparatively inexpensive. It may be stained a handsome red, and varnished when completed. The extra leaf provides for increased top room, when such room is desired, while the variety and the abundance of drawers will prove a great convenience, as sewing materials, darning materials, materials for crocheting, etc., may find separate accommodations, and yet all be within reach of the hand.

HOMEMADE SEWING TABLE.

Birthday Souvenir.

One of the prettiest and simplest of birthday souvenirs is the sachet shown in our illustration. Take a large linen envelope of the best quality and inclose in it a piece of fine wadding scented with sachet powder; seal and tie with satin rib-

bon, the bow in front. Write the address on the back, print on the post-mark "Birthday, '94," and fasten a few artificial flowers through the ribbon



AN APPROPRIATE BIRTHDAY PRESENT.

on the back, keeping them in place with a drop of glue. Use the favorite color and flower, matching the latter in the perfume, of the friend to whom it is to be sent. Forget-me-nots, violets, roses, pansies and sweet peas are all charming for decorations. If preferred, you may paint the flower on the back instead of using artificial flowers. In case the latter are used, perfume them with a few drops of triple extract.

Newspaper Pocket.

Let the heavy walnut paper pocket be replaced by a fresh linen one for the warm days that are coming. Appearances add so much to one's comfort. The old one will seem new in the fall, especially if decked in a new coat of varnish. One yard of linen, duck or denim can be made up into as plain or elaborate a pocket as desired. The suggestion offered here calls for a yard of cream-colored duck. The sides are hemmed, bringing the width to fourteen inches. "News Papers" is outlined on in shaded brown linen floss. The ends are sewed together, and the bottom finished with a row of linen fringe to correspond with the color of the lettering. The pocket is hung over, and fastened on a small brass rod and suspended by loops of the duck attached to the back. A piece of a curtain rolled could be substituted for the brass rod, making it a trifle shorter than the width of the case, and so it would not be visible; when

one did not care to expend much time in the making, a pretty design of cretonne or sateen, lined with stout muslin, would make a very pretty case.

Always Handy.

COOKING APRONS.—Two wide long aprons of fine unbleached muslin of soft sheer quality, with generous strings, and feather-stitched hems, will be an acceptable gift to any woman who does her own baking; and a nice large holder of white or brown linen, for removing pies from the oven, might appropriately accompanying them.

A LUNG PROTECTOR.—Take a piece of any stout cloth a yard and a half long and one yard wide line it with three thicknesses of soft, firm newspapers, fold it lengthways, cut a hole in the center large enough to slip over the head easily, bind the edges with braid, or cloth, and sew on strings for, tying under the arms. This arrangement slipped on under coat, or cloak, for a cold winter ride is so light as to be hardly felt, and yet it will keep out the cold admirably, and withstand many a snap from the jaws of that dreaded wolf—pneumonia.

A Pretty Snap-Shot Picture.

The owner of Egandale at Highland Park, Ill., has shown excellent taste in planting rare trees and shrubs, likely to thrive in the none too mild climate of the west shore of Lake Michigan. But one of the most charming features of his summer cottage is its vine-covered and curtained verandas. The well-known *Akebia quinata* is one of the permanent climbers in his collection, while clematis thrives with a little winter protection. Besides these, many tender annual climbers are employed to keep up a succession of flowers until late in autumn. Last summer one end of the veranda was nearly enclosed with *Cobœa scandens*, leaving a small open space in the center, an excellent set-

FRAMED IN LIVING GREEN AND FLOWERS.

ting for a picture, which our artist happily caught when one of the children looked out of this peep-hole, and this we have transferred, as seen in the accompanying picture. It is not only a neat thing of its kind, but is very suggestive of what may be taken with a snap-shot by itinerant artists, if they keep their eyes open.

For Young Housekeepers.

S. E. WILCOX.

When ironing starched clothes have a bit of beeswax tied in a piece of muslin to rub the sad-irons.

Hang in the kitchen in a convenient place for reference, a slate, with tape, pencil and sponge attached.

When the contents of a pot or pan boil over, throw salt immediately on the stove to prevent the disagreeable odor.

Scour the butter bowl and paddle once a week with coarse barrel salt, and use sal soda instead of soap to clean dairy utensils.

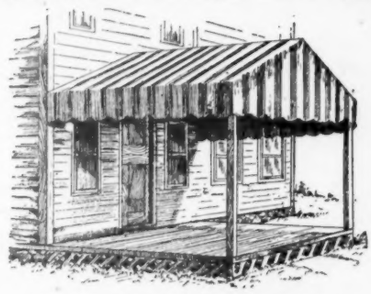
When baking fruit pies, to prevent the juice running out, insert a small cylinder of brown paper through an incision in the upper crust.

Make covers for holders leaving one side open, slip in the holder and baste the open side. When soiled, slip out the holder and wash the cover.

On ironing day select one rod or bar of the clothes-rack upon which to hang all garments with missing buttons, and those that need mending.

When ink is spilled upon a carpet, cover the place immediately with fine salt. When this becomes black, carefully remove it and put on more. When soot is dropped upon a carpet sprinkle liberally with salt, and sweep up at once.

Save broken and crooked tacks to clean bottles and jugs, they are preferable to shot; the sharp edges scrape off the adhering particles and stains.



AN INEXPENSIVE SUMMER VERANDA.

Cut warm bread with a long, thin, sharp knife, dipped in boiling water and wiped quickly. Cut the slices rapidly, and dip again as the knife cools.

Polish a piano that has grown dim from exposure to damp air by rubbing it over with chamois skin to which has been applied a few drops of sweet oil.

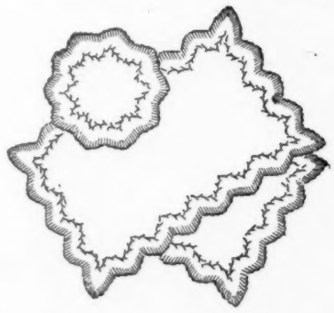
When darning woolen hose make the threads one way of stout thread, with the cross threads of woolen yarn. The result is a firm, smooth darn, which looks and wears well.

An Easily Made Piazza.

Too many country homes are unprovided with shade, where one may get fresh air without hot sunshine during the warm months of summer. Many think they cannot afford to build piazzas, while others object to having these permanent structures on the ground because they shut out the sunshine in the winter when it is specially needed. This is certainly one strong objection to permanent piazzas, unless they can be constructed against such a part of the house that no room may be shaded by their roofs. The illustration, however, shows how a summer veranda can be constructed at small cost of time or money,—a veranda that will give shade in summer, and in winter will keep no sunshine out of one's house. A permanent platform is laid before the door, and above this is arranged a light frame, well braced, that can be quickly taken down in the fall. This frame is covered with awning cloth, which is inexpensive, and, if cared for, will last many years. Of course the shape and size can be altered to suit the size or shape of the house.

Table Mats.

The housewife who finds it necessary to save carefully every piece that adds to the washing, and who still values dainty and neat table appoint-



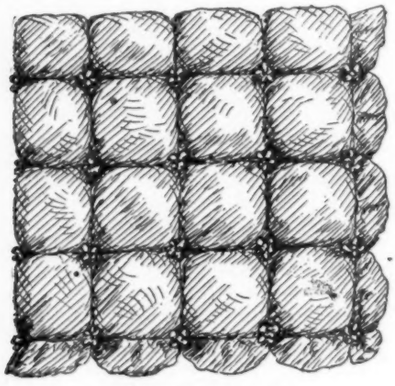
NEAT TABLE APPOINTMENTS.

ments, will find several sets of pretty table mats a great help in preserving the purity of the table-cloth, and thus decreasing the weekly wash. Seven mats, one round and three pairs of oblong, of assorted sizes, go to make a set. The size of the mats must depend upon that of the dishes. Heavy, white linen duck, worked with a pointed border of buttonhole edging, done in coarse linen floss, with a vine of herring-bone following the outline of the border, makes the most durable and

inexpensive mats. They are also pretty with straight edges, hemstitched or finished with a vine in feather stitching. These are much more dainty and far less work than mats done in crochet or corset lacing.

For Baby's Crib.

For baby's bed or carriage, nothing can be prettier than the dainty puff illustrated. It is of pale, rose-pink satin puffed over a filling of down and ornamented with little five-looped bows of delicate violet-blue ribbon. The lining—a square yard of satin covered with two layers of fine sheet wadding—is marked off into five-inch squares, which gives seven squares each way and a bit to turn in around the edge. The puffed cover, a yard and a half square, is marked off into six-inch squares; a little more than three inches is turned



DAINTY SATIN PUFF.

under all around the edge and basted; then from edge to edge, both ways across the satin on the dividing lines, are run silk gathering threads, which are then drawn up to fit the cover to the lining. Each six-inch square is gathered to fit the five-inch lining square, and, after being filled with down, is sewed to position through and through. The doubled edge makes a pretty scalloped border, and the bows, nestled between the puffs, are suggestive of scattered violets. The filling might be sprinkled with violet powder, if desired.

Fancies in Feathers.

Very dainty uses may be made of the feathers from domestic fowls, and two of them are suggested here. In the little fan shown in Fig. 1, pure white tail or wing feathers are employed, and in the one represented in Fig. 2, the pretty, brown-specked feathers from the tail of some departed Brown Leghorn "biddy" are used, though the beautiful feathers of the grouse and partridge are to be preferred if they can be found. The manufacture of the first fan is quite simple. Some sixteen or eighteen perfect feathers are procured and rounded at the tip and trimmed about a little. The quills are cut off up to the web of the feather, and then the base of the quill still remaining is pared off flat with a jackknife to allow proper surface room to which the slender sticks are to be glued. The feathers are dyed a faint rose color or any delicate tint one chooses. The tiny fan-sticks must be very thin and smooth and not more than

FIG. 1. PLAIN WHITE FEATHER FAN.

three-sixteenths of an inch wide. They are gilded and glued neatly to the rosy feathers, running up a little on the wrong side and having rounded or pointed ends. Really the fan has no right or wrong side in this way. A little pink bow of ribbon is tied to one of the outer sticks. A spray of flowers runs across the feathers, painted in oil

FIG. 2. ORNAMENTAL HOMEMADE FAN.

colors in white and pink with a touch of green. The feathers are joined by a silken thread running through the quills near the base and hidden by the overlapping webs. A very dainty child's fan has feathers of graduated length, from six inches in the middle to three at either end. The little fan in the second illustration is more ornamental than useful, being designed to hang up most of its time, and being provided with a ribbon loop for that purpose. The feathers are unornamented and uncut in any way. Nature provides the colors and everything but the ribbons. There are no sticks. The ends of the quills are enclosed in a bit of a round pin-ball—or it looks like a pin-ball. It is very stiff and covered with yellow plush, and the quills are glued into it fast and strong. A narrow yellow ribbon is woven through the quills next to the feathers, and below it a broader ribbon of the same shade. This latter extends out into a bow and generous loop of ribbon.

Decoration for Woodwork.

The accompanying illustrations of a plant box, shown in Fig. 1, and an umbrella holder, in Fig. 2,

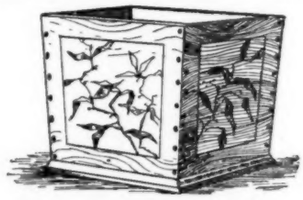


FIG. 1. ORNAMENTAL PLANT BOX.

show a method of decoration that is quite readily applied by those who have some artistic ability.

FIG. 2. NEAT UMBRELLA STAND.

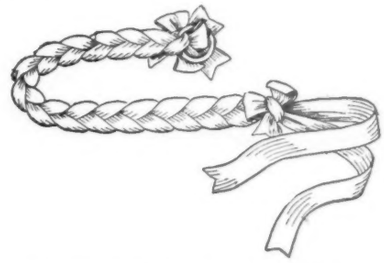
These articles are constructed of some handsomely-grained hard wood, such as oak or ash; upon the sides is then drawn some design that can be treated broadly. The lines and the shading are then made permanent by going over them with a red-hot point of iron, burning the wood more deeply where heavier lines or deeper shades are desired. There is an exquisite softness about the result that is especially effective and handsome. Cornstalks and their leaves make a particularly suitable and effective design where a tall panel is to be decorated. Hard wood picture frames, and almost any kind of hard wood amateur work, can be decorated in this way.

Worth Trying.

Probably there is no better form of nourishment, even in summer, than soup, but this need not necessarily be taken hot. Make your good, rich beef soup in the usual manner; let it cool and free it from fat. If it has formed a jelly, simply melt it over the stove without allowing it to get heated, and pour into bouillon cups half filled with cracked ice. Seasoned nicely, and eaten with wafers, this is simply delicious, and, with a salad of lettuce and wholesome graham bread, is as healthful and good a lunch as one can take in August. It is also a nice soup course for dinner. For an invalid, strong beef tea or essence mixed with an equal quantity of sweet cream and frozen, is most nutritious. Ice-cold beef jelly takes one pint of beef essence; dissolve four tablespoonfuls of gelatine in eight of cold water; after soaking it for half an hour heat it slowly over the stove, add the warmed essence, and cool in small cups. Serve ice cold.

Baby's Carriage Guard.

This pretty little guard for baby's carriage may be made of two-inch ribbons in a single or different colors, or in three shades of one color. That part of each ribbon which is braided is folded over a flattened roll of strong muslin, and the edges are invisibly caught together along one side; then they are braided in a flat, close braid, as shown. At one end of the braid the three ribbon ends are tastefully knotted over a silvered ring, while at the other end one ribbon is tied around the other two, which are longer and are

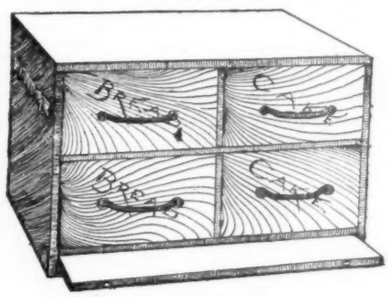


PRETTY GUARD FOR A BABY CARRIAGE.

left to flow freely. When in use the ring is slipped over a little silvered knob or hook placed at one side of the carriage and the two ribbons at the other end are tied in a jaunty bow around the rod at the other side. Both ends of the guard might be secured with rings if the knobs could be handily arranged, or both might be tied with ribbons if there were handy rods or openings for their accommodation at each side. For a willow carriage with a silken shade, an ecru satin ribbon braided with ribbons to match the shade makes a lovely guard. For the little descendant of a soldier, a guard made of the national colors, in gleaming satin ribbons, would make a beautiful and appropriate gift.

Bread and Cake Cabinet.

Numerous households have the tin cake boxes, and such are better off than the families whose cake reposes upon plates upon shelves and whose cookies and doughnuts are quartered in covered tin pails, but tin cake boxes are rarely tight enough to keep out ants and other insects, or to keep in the moisture, without which cake is dry and tasteless. Moreover, putting several kinds of cake into one tin box usually results (in the moving and replacing of one variety to get to another), in a serious "mussing" of the cake which greatly injures its attractiveness, and, therefore, the pleasure of eating it. A much better arrangement, and one easily secured, is to have a cabinet made, such as is shown in the accompanying illustration, with four or more drawers, broad and not too deep, each fitting tightly into the cabinet,



USEFUL STOREROOM CONVENIENCE.

a part of which are to be used for bread, which, in many households, has also no fixed abiding place where it may be kept fresh, and a part for cake. The loaves, either of bread or cake, can thus be

laid in one of the drawers, and not thereafter disturbed until wanted for the table. Below the lower drawers is a place to slide in a cake and bread board, which can be drawn out when it is desired to cut a loaf, after which it is slipped back into place, thus being kept clean. A bread knife will always be at hand, if some such arrangement is made for it as is shown in the cut. Such a cabinet may well be made of whitewood, smoothed with sandpaper and then shellacked.

Pretty Wear for August Days.

August is the "outing" month *par excellence*, the time of all others when most journeys are taken, as well as short trips and excursions in quest of health and pleasure. Traveling costumes, therefore, are now greatly considered, and the dress oftenest observed this season, on railroad and steamer, is a skirt and coat of covert suiting in fashionable beige, tan or gray, or of the reliable old standby, black or blue serge, worn either with a trim vest or negligeé shirt waist. The more severely plain that these gowns are made the more *chic* are they considered. The skirt clears the ground all around and has no trimming, except, perhaps, a few rows of stitching above the hem. Very handsome ones have a lining of changeable taffeta silk, but more often they are left unlined. The tight-fitting Tuxedo coat may be either long or short, as is most becoming to the wearer, and single-breasted or else lapped and fastened by one or two large buttons at the waistline. The revers resemble those on gentlemen's coats, and the pockets are merely diagonal slits stitched and without flaps. All fancy collars and epaulettes are unsuitable on these outing dresses. The dark colors are suited to nearly every one, but grays and tans are very trying to some complexions, and should be relieved by a vest of some becoming hue. A scarlet waistcoat with a gray jacket is particularly effective and pretty, as is one of light blue dotted with white, worn with a beige costume. Linen collar, chemisette and cuffs and a four-in-hand tie or narrow cravat complete these suits most stylishly, but on very warm days will be discarded in favor of a cool silk, pongee or cheviot shirt waist. Indeed, the desirability of these dresses is their adaptability for all times and temperatures, as were the Eton and blazer gowns of past summers, while it may be in order to record that the Eton jackets and blazers are by no means *passé*, but are still frequently seen and sold in the shops.

The hat considered most modish for walking, traveling and outings generally, is the "Duchess of York," which promises to partly supercede the popular sailor. It is less severe in shape, has a low crown indented like the "Alpine" hats, and an extremely graceful brim, broad in front, well curled on the sides and quite narrow at the back. It comes in white, black, brown and blue straw, but the most *distingué* are those of light fancy braid, either écru or light butter-color, and trimmed with black. The brim is either faced with black satin or merely bound, while a twist of black ribbon encircles the crown and ends in a bow on the left side, in which black quills or small feathers are thrust.

To accompany the duck and linen suits described in our June number, there are now shown French sailor hats of white duck, the linen fabric being smoothly stretched over a shape of rice straw, which is seen only on the inside of the brim. These are complete with only a band of ribbed ribbon, but are sometimes quite elaborately trimmed with silk lace and high, nodding bunches of flowers.

The modistes say this is to be a "white summer," and by white is meant all the shades from the hue of the newly fallen snow to deepest cream, and what the French call *beurre;* while several tints often appear in the same gown. This is convenient for those who have fine old real lace, that has become yellowed with lying, for every scrap of such is now brought forth and used for the adornment of a summer frock, and especially worked into the Massellone collarettes *à la Richelieu*, which make any costume dressy, and give such a quaintly dignified air to even the youngest and prettiest girl, being stiff and straight on the shoulders and falling in deep peaks on the chest. Some of the handsomest white gowns are of embroidered muslin, while it is a fad of the moment to accentuate them by a touch of black. Thus, a stylish model has a straight, full skirt of yellowish mull, heavily wrought in open-work embroidery, the bottom of which is bound with black watered ribbon, while a black bow catches it high on the left side, revealing a skirt below, trimmed with an embroidered flounce. For the round bodice, the embroidered muslin is arranged in a full front on a fitted lining, being gathered on the shoulders and at the belt, while the back is plain at the top. This is trimmed with bretelles of pure white linen with an edge of Irish point, widening over the shoulders and tapering to a point at the waist, and the sleeves are merely great puffs to the elbows, caught down here and there. A black belt is worn with this toilette, but variations are made and the idea of mourning dissipated by bright collars of pink, lavender, blue and emerald green ribbon.

White tulle is a favorite garniture for round hats, bonnets and toques, and a bird nestled among the airy clouds is a novel adornment. Colored tulle is, also, much employed, and a rather odd English fashion is to lay several colors, one over the other. Thus a London hat of beige straw is trimmed with no less than four layers of tulle, pink, black, green and blue, while a bunch of violets clusters at the back, and a black aigrette is poised in front. Small bonnets, too, have *choux* or rosettes of tulle, in four or five different hues, set around the crown. Dotted tulle is rather more serviceable than the plain.

August Dainties.

Veal Loaf.—Three and a half pounds of the nicest part of a leg of veal, lean and fat, chopped fine with a slice of salt pork. Mix with this six soda crackers rolled fine, two beaten eggs, butter the size of an egg, a tablespoonful of salt, a teaspoonful of pepper, one nutmeg and a little minced parsley. Work together in the form of a loaf of bread, put bits of butter all over it, dust with cracker crumbs, place in a dripping pan, pour in a little water, and bake from two to three hours, basting often.

Cream Sauce.—Beat one-fourth of a cup of butter to a cream, adding gradually half a cup of sugar, half a cup of flour, a teaspoonful of vanilla essence and two tablespoonfuls of milk; have all perfectly smooth and set the bowl in a vessel of boiling water; beat until creamy, adding two tablespoonfuls of cream.

Velvet Cream.—From a quart of milk take enough to mix smoothly, four tablespoonfuls of cornstarch; put the milk over the fire in a double boiler, and when boiling stir in six tablespoonfuls of sugar, the blended cornstarch and four tablespoonfuls of grated chocolate smoothly mixed with a little of the boiling milk; stir until smooth; take from the fire and beat with an egg beater for ten minutes. Pour into small molds, and eat cold with cream.

Dandy Pudding.—Bring a quart of milk, less sufficient to mix two tablespoonfuls of cornstarch, to a boil; add slowly the yolks of four eggs beaten with half a cup of sugar; stir until it thickens, pour into a dish to cool, and add a meringue made with the whites of the eggs and half a cup of sugar; set in the oven a moment to color.

Boiled Tongue.—Have a fresh beef tongue put into corn for thirty-six hours. Cover with cold water, boil until tender, take out when done, skin it and return it to the liquor in which it was boiled, with half a cup of brown sugar, half a cup of vinegar, two dozen cloves, two dozen sliced lemons and a cup of whole raisins. Let all boil together for a few minutes, and serve with a brown gravy made of some of the liquor strained and thickened with browned flour.

Stuffed Eggs.—Boil eggs ten minutes; cut in half the long way, remove the yolks, chop fine with a quantity of minced cold chicken, equal to the yolks in bulk, seasoning and melted butter; fill the whites and put the halves together again; roll in beaten egg and crumbs, and fry a moment in boiling fat, using a wire basket. Lift out, drain and serve with a tomato sauce, or in the center of a circle of green peas.

Rice Muffins.—Beat two eggs, add a cup of boiled rice, three tablespoonfuls of flour, butter the size of an egg, and a pinch of salt, and bake in muffin rings.

Peach Tapioca.—Boil one coffee cup of tapioca until clear, using a double boiler and beginning with three cups of water; pour over the contents of a can of peaches drained from the juice and laid in a baking dish. Set in the oven for half an hour and serve with cream sauce or cream and sugar.

Liver with Terrapin Sauce.—Boil a calf's liver and cut it small. Season highly with pepper, salt and mustard, and return to the fire with two cups of broth; let it boil up, and add four ounces of butter and four hard-boiled egg yolks cut in bits.

Tomato Beef.—Take a thick cut from a round of beef weighing six or eight pounds; pour over it a cup of water, half a can of tomatoes, two small onions minced, and season with cloves, pepper and salt; cover closely and simmer gently four hours.

Pepper Pot.—To one pound of cooked tripe cut in small pieces, add one onion cut fine, one pint of potatoes cut in dice, salt, pepper, ground cloves and minced parsley, and an equal quantity of cooked veal, chicken, or beef; cover with stock and cook until the potatoes are done; fifteen minutes before serving take two tablespoonfuls of flour, scald and make into dumplings the size of a pea, drop them in, thicken the gravy with a little flour, taste to see if it is seasoned properly and serve.

Cheese Pie.—With one cup of grated cheese, one of bread crumbs and one of milk mix two well-beaten eggs; pour into a buttered baking dish, dot with butter, and bake twenty minutes.

Date Pudding.—Cover two tablespoonfuls of gelatine with a cup of cold milk. When it has soaked twenty minutes, stand the bowl in a saucepan of boiling water until the gelatine is thoroughly melted. Let it cool, and meantime whip half a pint of cream, add half a cup of powdered sugar, a cup of chopped dates, and a teaspoonful of vanilla; add the gelatine and stir until it thickens, when turn into a mold to cool.

Whole Wheat Bread.—The whole or entire wheat flour requires different treatment from ordinary wheat flour in bread making. Set the bread early in the evening as follows: Soak a cake of yeast in a cup of lukewarm water; meantime make a batter with a quart and a pint of water, half a cup of molasses, a tablespoonful of salt and flour to make it as stiff as you can well stir it with a spoon; add the yeast and more flour, if this thins the batter too much; pour into well greased pans and let it stand all night. This should make four loaves. Do not put the pans more than one-third full. Bake after breakfast.

Salmon Croquettes.—Pick one pound of cold boiled salmon carefully from skin and bones; mix with a teaspoonful of lemon juice and a tablespoonful of minced parsley; put two ounces of butter in a saucepan, and when melted stir in one tablespoonful of flour; let them cook together and add slowly three-fourths of a pint of milk or cream. Now add the picked fish, season with salt and cayenne, and when very hot stir in the beaten yolks of four eggs. As soon as the eggs "set" turn out on a flat dish to cool, then shape into cones, dip into beaten egg mixed with a little cream, roll in crumbs, set aside for an hour to stiffen, and fry in boiling fat, using a wire basket. Do not fry more than four at a time or the temperature of the fat will be too much reduced. A favorite Irish dish is to mix cold boiled salmon, minced fine with bread crumbs, beaten eggs, seasoning and lemon juice in proportions to suit the individual taste. Then bake in a deep buttered dish until hot through and nicely browned, from half to three-quarters of an hour.

Lemon Ketchup.—This epicurean sauce is a good addition to the cold meats that often grace our tables in summer. Cut half a dozen smooth lemons into slices, remove the seeds and rub with three ounces of salt. Mix a seasoning of one ounce each of cloves, mace and cayenne, and two ounces each of mustard seed, allspice, white pepper and horse-radish. Put the slices of lemon in a stone jar, sprinkling the mixed seasoning between; pour over two quarts of white wine vinegar made boiling hot; let all stand for 24 hours, and strain and bottle for use.

Brown Bread.—Into one cup of syrup and one and a half of sour milk, stir one cup each of graham flour, corn meal and white flour. Add to this one cup of seeded raisins, a half cup of English currants and one and a half teaspoonfuls of baking soda. Put the dough, after mixing, into a two-quart pail with the cover tied down, set in a kettle of boiling water and boil steadily three hours. The water must not boil over the top of the pail.

BOYS & GIRLS

Donald's Will and Way.

(A Boy's Adventure.)

ANNIE HOWELLS FRECHETTE.

"It is a fine gun!"

"A fine gun, indeed, sir, and an expensive one, too, if I know anything about guns."

"Well, I rather think you do, or I wouldn't leave this for you to overhaul. It cost me an even two hundred, so use your best skill in repairing, and take your time to it, for I shall be away for a couple of weeks, and it will be safer with you than in my room," and the young man strode lightly away.

The old gunsmith stood studying the mechanism of the handsome fowling piece. His son, a boy of twelve, stole up beside him and laid his hand upon it.

"Let me see it, father," he pleaded.

His father looked at him sharply through his large and impressive spectacles, and was about to refuse, but for some reason he relented and laid it grudgingly into the outstretched hands.

"Now don't be too curious, and don't you ever touch it, nor any other gun, when I'm not around."

The boy did not answer, but turned the piece about and sighted along its double barrel, softly cocking and uncocking it, and gently rubbing its stock with his jacket sleeve. Then he looked up.

"It's the first double-barreled gun I ever saw, father."

"H'm! many a boy has lived and died without seeing one," and he stretched out his hand.

The boy backed off. "Just let me have a good look. I'm not hurting it."

"That gun cost its owner two hundred dollars, Donald,—*two hundred dollars!* and if anything happened to it in my hands, I'd have to sell my shop to pay for it."

The boy whistled a low, appreciative whistle, and looked about him. The shop meant a living for his father, mother and himself, and selling it meant giving up forever the well-beloved tools with which, upon rare occasions, he was allowed to materialize some of the many wonderful inventions which filled his busy brain. He hastily handed the gun to his father, and watched him carefully deposit it upon the rack above his bench, and, as he noted how the sunshine glinted in little bluish gleams along the polished barrels, he thought of all the possibilities of such a gun.

COULD HE OPEN IT?

There was little in common between the father and son beyond their skill with and their liking for tools, and the readiness with which a way to do a thing presented itself. This gift had made the father famous in all the country about, and his skill in many branches was always in demand, and it had got the son out of many difficulties, as well as into some. It had made him the owner of an old gun—the gift of one of his father's customers—which regained something of its early usefulness under his skillful fingers; and it had given him, after repeated attempts and failures, a fairly safe canoe, which he paddled through streams.

"Look here now, Donald, you leave off thinking about that gun, and go split that wood for your mother." His father spoke sharply, as he turned upon him from his bench.

But the ghost of the gun went with the boy. His fingers tingled to try it. What would he not give to have it in his possession for a few hours? He half resolved to ask its owner to lend it to him some day. He knew him. They had once spent an afternoon together in his canoe, and he believed that he would only have to ask, to be allowed the coveted gun.

We all know that things come to him who waits. That is, we know that if one is on the lookout for an opportunity it is pretty apt to show itself. Donald's opportunity came. For years his father had talked of taking a journey to see his sister, and now, as she was about to move to a distant part of the country, it seemed as if it could not longer be put off. So, after much calculating of the cost and the loss through absence, the journey was decided upon. Donald was profuse in his offers of service during his father's absence, and showed commendable zeal in arranging, as far as lay in his power, all the incidentals of his departure.

The gunsmith walked away early in the morning, in order to catch a train which passed within four miles of his home. It was a long day to his wife, and when night fell over the little home its unusual emptiness so impressed her that no better way to get through with the loneliness presented itself than to go to bed early, which she did.

Circumstances could hardly have shaped themselves more propitiously for Donald. He had not deliberately planned to disobey his father, who had forbidden his shooting at night, but when everything pointed to the easy accomplishment of his wishes, he found himself possessed of very little will to resist. Accordingly, when the steady and sonorous breathing from his mother's room assured him that she was fast asleep, he quickly made his preparations for a night's shooting in his canoe. Just as these were about completed, a thought caused him to halt.

Why not take the gun from his father's shop?

He stood irresolute. The gun had been cleaned and repaired; he knew exactly where it hung; he

could put his hand on it in the dark. But what if something were to happen to it while in his hands? He would not allow anything to happen; he knew how to handle a gun. Still he had been forbidden to touch it. What if his father should find out? How could he fine find out? He would remove every trace of its having been used.

His foot was on the stair.

What a beauty the gun was! How he would like to blaze away with it for a couple of hours. It was just the night for muskrats--moonlight and cloudy by turns. He took a stealthy step down the stairs.

If only he had a chance to ask the owner of that gun! He'd tell him in a minute to take it. He *would* take it.

Once his mind was made up, he stole swiftly down the stairs and out through a window, which, in their quiet and safe neighborhood, stood open all night. With nimble fingers he undid the fastenings of the shop door, and to grope about and secure the coveted gun was only the work of a moment; then he sped away to the mill race, where his canoe lay ready for him.

As he paddled down the stream, his spirits rose to feverish heights. The buoyant water, into which his paddle fell rhythmically, the full moon, and the cool wind playing around his thinly clad shoulders, all contributed to his eager joy.

With keen eyes he scanned the shore on either side for his game, and when, presently, he saw signs of it, he threw his paddle down, and, loading his gun, laid it across his knees, and was ready. At last, scarcely a dozen yards away, he espied what seemed to his excited eyes a whole family of muskrats, sporting at the water's edge. His softly-gliding craft did not disturb their gambols, nor did his low whistle frighten them.

With loudly-beating heart, but with steady nerves, he raised the gun to his shoulder, he felt the cold steel against his cheek, he took a careful aim, and then he lost his head. He never knew why he did it; he only knew that his trembling hand fell and pulled the double triggers under it, then there came a deafening report.

But poor Donald neither listened to the report, nor counted the slain by that awful volley. The next thing he knew he was rising—blowing and stunned from the water, and with the instinct of self-preservation, striking out for the shore. As he scrambled up the bank, his senses came quickly back to him. His canoe was floating bottom upward at the opposite side of the race; his hands were empty—his gun was gone!

As the full extent of his loss came over him, the warm summer night seemed to turn to one of wintry coldness. The water dripped from his soaked garments upon his bare feet, numbing and paralyzing him. The moon smiled brightly down upon the disturbed water, which laughed back from the wide, circling ripples which hid his treasure from him.

He wished he had drowned. But he had not drowned, he was still alive and had the consequence of his escapade to face. It was of no use to cast enquiring eyes toward the boat, it had turned completely over, and the gun had gone into the water with him. However, the problem was not how it went in, but how it was to be got out. He stood with his slender boyish hands tightly clasped together, and thought very hard and earnestly.

But when he tried to think what to do, his mind was distracted by picturing the scene between his father and himself when he would confess his guilt. And beyond that he saw the shop and tools pass to other hands, and in the unshaded outlines with which a child draws, he saw them all reduced to beggary.

He *must* get the gun! That he had always been a boy of resources stood him well now, and faintly at first, then more boldly, a light glimmered through his despair. In imagination he saw the gun lying in the slimy bed of the race. He remembered how the race had looked once when it had been emptied. When would they empty it again? Why—his cold hands relaxed and he felt the warm blood flowing into them once more—*why might not he empty it?*

He drew a long breath and scanned the silvery strip of water. Two miles below was a flood gate.

He would open the sluice, empty the race, and get the gun. Not a moment was to be lost.

He flung himself into the water and swam across to his canoe. It was easily righted, and quickly improvising a paddle he was soon beating his way with frantic strokes toward his goal. It was not long until he had reached it. Leaping upon the gate, he scrambled over it with the agility of a squirrel and studied its fastenings and working. Then he began.

His fingers grew like steel as he gripped again and again the wrench on the valve screw in his endeavors to open the gates. They should open, he would not fail! At last a thin stream began to trickle through between the doors, and as his ear caught its music, hope strengthened anew his nimble fingers. He clung to the levers and struggled—frantic one moment with despair, and the next wild with hope. At last a steady outpour of water thundered upon the silence of the night, seeming to shake the overhanging trees.

What if they should hear it at the mill? For a moment he stood erect—with his head thrown back—and listened. Save where the water churned its greenness into snowy foam and swirled away in great circles toward the bridge, no sound was to be heard. Springing into his canoe, he bent again to his paddle, and began his difficult return. He could feel the water slipping swiftly away beneath him, and the reaction from his tense excitement was stealing over him, while his labor at the gate had left his temples throbbing and his hands bruised and swollen. But it was no time to think of aching limbs—he was still far from success.

Presently he found his progress so slow that he decided to abandon his canoe and make the rest of his journey on foot. He knew the ground well and he flew forward, only stopping to note the sinking of the water, and to take breath.

If only the moon would keep on shining. Every few minutes great fields of fleecy clouds would sweep across its silvery face, veiling its friendly light and filling his heart with dismay. But on he sped, stumbling over roots and tearing through thickets of bramble—and at last he began to recognize landmarks near the scene of his capsizing. And although not two hours had passed, it seemed a month since he stood dripping upon the bank, resolving to open the sluice.

Scarce breathing he bent eagerly forward and scanned the now nearly empty bed. How much longer would he have to wait? Once more the hungry eyes sweep over the water—this time they rest upon an object slanting upwards along which the moonbeams glance. With a smothered shout he rushes upon it, and there, slimy and glistening, muzzle downward, is the beautiful gun.

Drifting boat and open sluice are forgotten—as clasping the recovered treasure close to his breast, he bounds homeward. And safe within the little shop, he bends over the work bench—tenderly polishing and drying, and polishing and drying again every part of the gun, until even the jealous eyes of his father could not have found a speck or a spot of dampness outside or within.

There was great excitement next day when the race was found empty, and though a large reward was offered for the finding of the miscreant who had tampered with the gates, the reward went unclaimed.

Neither the open gates nor the drifting boat told the story, nor did Donald, until thirty years later, when, coming back to the old home to go over the scenes of his boyhood, he drew his chair up beside that of the old miller, as he sat on his porch one summer afternoon, and then he told him all. And the old miller, who no longer counted time by the revolutions of his mill wheel, laughed until the tears rolled down his face. As he wiped them away he said,

"I'm afraid, Donald, that if you had told me this thirty years ago, these tears would have been on your face instead of on mine."

Swimming Stones.

To "swim like a stone" is usually supposed to mean to sink to the bottom of the water. But there is a sort of stone which floats, and because it moves lightly on the surface of water currents was long known as "the swimming stone."

In reality it is stone which has been melted by the intense heat of a volcano, and then cooled so rapidly that its expanded particles have not had time to condense and become solid again. Thus all its little cells are filled with air and act like so many tiny balloons in supporting the stone on or near the surface of the water.

This sort of stone is called pumice, and is in use, for various purposes, but chiefly for polishing, all over the world, though there are few places where it can be found in its native state.

Probably the greater part of all the pumice stone used comes from the Lipari Islands in the Mediterranean Sea. Here are the great volcanoes of Stromboli and Vulcano, which are almost incessantly in operation. It was on these islands that the ancients imagined that their god Vulcan lived, and that the flames from the volcanoes were the fires from his giant forges. To-day the volcanoes still flame and roar, but even the most ignorant of the people no longer look for Vulcan to appear.

The islands are in constant danger from earthquakes and eruptions; nevertheless they are thickly inhabited, and a large portion of the people earn their living by gathering the pumice stone and other volcanic products, such as sulphur, niter and soda.

To visit the pumice-stone gatherers at their work we proceed up steep, winding paths, until at a height of about 1,500 feet, we come suddenly upon what seems to be a snow-clad valley, enclosed by snow-clad hills. But we see at once that it cannot be snow, for the sun is beating so hotly that the heaviest snowfall of the Arctic regions could not remain long unmelted. So we look more closely and find that the seeming snow is a fine and glistening white sand. Into the sides of the white hills tunnels have been bored, and in and out of them are coming and going the gangs of pumice-stone gatherers, both men and women. The stone exists in quantities in the midst of the sand, which is itself the same stone disintegrated by the action of time and weather.

The workmen—as often women as men—fill their baskets with the light stone and carry them on their backs down the mountain to the shore. Thence the stone is shipped to Messina, or Leghorn, where it is unloaded and reshipped to ports all over the world.

Dick's Problem.

ANNIE L. HANNAH.

It was a beautiful November day; one of those rare Indian summer days which would woo us into the belief that winter is not, after all, so very near. The air was full of a sweet stillness, and the sun shone soft and warm through the blue haze which spread itself like a lovely veil over mountain and valley. Great tufts of late goldenrod, and the scarlet berries of the mountain ash gave touches of brilliant color, and Dora—who had been to the woods for acorn cups, of which her grandmother made the daintiest of little emery bags—was now strolling homeward, her heart filled with a quiet happiness. The woods were thinning now, and here and there between the trees she could catch glimpses of the river, sparkling and dancing in the broad sunshine. Some robins whistled among the branches, and the dry leaves rustled with a pleasant, crisp sound beneath her feet. Surely this was a glad, a very happy world, and there was joy in simply being alive!

Suddenly, as Dora came out upon the bank of the little river, her cheeks grew pale and an expression of horror came into her blue eyes. Out there on the beautiful river was a man in a boat, and she knew that if those long, powerful strokes continued, the boat would soon round the bend, and then plunge into the rapids where it would instantly be hurled into sure and utter destruction over the dreadful fall below.

"He is a stranger, of course he is a stranger, or he would never be there!" almost sobbed poor Dora. "O, will he never look! will he never hear me!"

Yes, at last he hears and turns his head over his shoulder, and comprehends that the girl is warning him back; but when, though by no means understanding the reason, he strives to turn the boat, it is too late, and he is swept on toward the fatal bend.

For one instant Dora stood horror-stricken. "Nothing can save him now, nothing!" she cried, wringing her hands; "nothing; unless—" The boat had not yet reached her, she had still a few hundred feet the start, perhaps it might be done!

Away on the very wings of the wind flew Dora, casting away her basket, hat and jacket, as she ran, keeping close to the bank, the eager, almost paralyzed watcher in the boat following her movements with a stony gaze, for the bend is rounded now, the falls in sight, his peril fully realized. She cannot help him, he understands

that well, bnt he wishes that she would not leave him; if she would only stay where he could see her, where he could see her till—the very end!

But what is this? for, as she runs, Dora turns for an instant and motions with her hand toward where a great birch leans far out over the river. "She means me to catch the branches, but they are far too high for me to reach. No, poor child, it is of no use!"

The tree stands very near to where the river takes its frightful plunge, and beneath it the boat must pass.

"Ah! what is that girl doing?" came from between the white lips of the man who watched her; for Dora had reached the tree, had, she never afterward could tell how, swung herself up into it, and was crawling out onto the longest branch—her purpose plain at last, for as she went the branch bent lower and lower, and, finally, the girl laid herself flat down upon it, and with fast closed eyes, the blood surging in great waves to her brain, clung to it for her life and—and his. "I must not faint, I must not," she cried in agony, "or we will both be lost!"

Nearer came the boat and nearer. The man, with set face, had flung away his long-since useless oars, and now stood erect—waiting. Dora, after one swift prayer that she might not faint, that she might not fall, had opened her eyes, for she must look, must know the instant she could leave her perilous position, for both their sakes. It was hardly a minute, though it seemed hours that she lay there watching the oncoming boat. Would the current sweep him beyond? had she, after all, been mistaken? O, how the falls roared! how her head whirled! O, joy, the boat is coming well in beneath the over-spreading branch—he has put up his arms; he,—yes, he has caught it, and now hangs suspended above the foaming, roaring waters; for the boat, relieved of his weight, swept madly on, and the next moment went whirling, twisting, dashing over the falls.

Dora crept slowly, carefully backward, regained the tree, slipped to the ground, and fell fainting upon the bank, as, hand over hand, the rescued man lifted himself along the swaying, crackling branch, and a moment later was bending over Dora.

"Grandma! Dora! such an adventure!" and Dora's brother Dick came panting up the stairs and burst into the sitting-room.

"Such an adventure!" he repeated, falling into a chair, never noticing that Dora was lying, very pale, with great dark circles beneath her eyes, upon the sofa. "Nothing like it has ever happened here before! The town is wild over it, and the hero was a girl! a girl, Dora; think of that! Such presence of mind, and such pluck! I don't know who she was, and the fellow who told me couldn't find out, for it was a stranger she saved. Listen!" And he launched into a description so vivid, so realistic that it proved more than poor, overwrought Dora could endure; and, in the midst of his narrative, Dick broke off suddenly, crying:

"Grandma, look! what's the matter with Dora?" for Dora had turned her head on the pillow and quietly fainted away again.

His grandmother laid down her work, seeming hardly surprised, as she went to Dora and began to rub her wrists, while Dick bent anxiously over her and bathed her head; but as the girl finally gave a deep sigh, his grandmother lifted her eyes with something very like a twinkle in them, and looking across to Dick, said a few words in a low tone.

"What!" cried Dick, straightening himself suddenly, "what is that you say, Grandma? Dora was that girl!" It could'nt be possible—Dora who screamed when a little spider hung over her, and at the very sight of a snake or mouse! Dora, whom he had so often twitted for her cowardliness!

When, a week later, a case was put in Dora's hand, which, on being opened, revealed the most beautiful little gold watch that ever gladdened the heart of a girl, with an inscription in the lid which expressed the gratitude and lasting obligation of the donor and his family, it was Dick who was loudest in his declarations that "if ever a girl deserved her luck it was Dora."

"But how," he would say over and over again to himself, with a puzzled shake of his head, "how a girl who will squeal at a mouse, and cry at a spider, could do such an out-and-out brave, splendid, no-mistake-glorious thing as that, is past me!"

The Children's Feast of Cherries.

FRED MYRON COLBY.

Across the sea, in the quaint old German city of Nuremberg, the children have a beautiful custom of celebrating the time of the first ripe cherries, by a festival known as the "Feast of Cherries." The ceremony is one of the most interesting occasions observed in that old city of a thousand years. May day in merry England and our own Independence day, are not more joyfully honored than the first day of ripe cherries is welcomed by the boys and girls of the ancient Franconian town.

No labor is done that day in Nuremberg. Everybody is wide awake and stirring, from the gray-haired, dignified burgomaster, down to 'prentice lad and chambermaid. Mirth, hilarity and feasting make the day festive. The bells ring forth their sonorous clang from the high, antique belfries; balconies and doorposts are crowned with garlands, and gray walls are festooned with vines and flowers until they look like bowers of beauty.

The festival is an old one, tracing its origin far back to the stern and warlike days of the middle ages. And it is not so much because summer has come, as because their ancestors celebrated the day that they observe it. Indeed it commemorates an event of great importance in the history of Nuremberg.

Back in the early days of the thirteenth century, just after the close of the third crusade, when France was under Philip Augustus, its first great king since Hugh Capet, and England was enduring the sway of John, its first weak king since the conquest, and whom you will remember as the murderer of poor little Prince Arthur of Brittany, there was a war in Germany. Frederick Barbarossa, one of the greatest princes of his age, had died, and two rivals, Otho and Philip, were claimants for the crown. After a long contest, Otho was successful. Still, many of the German towns refused to open their gates to the conqueror. Nuremberg was one of these; and one fine spring morning the army of Otho, a glittering host, appeared before the walls. They imagined the city would not endure a long siege, but the Emperor was mistaken.

There was little of joy or festivity in Nuremberg then. Stern soldiers shut the people in, and the knightly mail, the shield, the battle-axe and apron glistened under the summer sun and the silver moon. No more did the bells ring merrily, and the beautiful river and green fields were dull and somber. The minstrel's harp struck forth no sweet sounds, the knight and his men-at-arms looked sad and worn, the eyes of noble dame and cottage maiden were dim with tears, and even the jaunty page who carried my lady's train lost his sprightly look. Gaunt famine was in the city, but still the mailed sentinels kept watch and ward upon the walls, and the priest prayed, as he had need to do.

Twelve weeks had come and gone. The breath of June was in the air, but it brought no hope to the beleaguered town. The people were thin and haggard with hunger; the last bread had been distributed among the populace. There was nothing left for the morrow, yet the officers of the town did not yield.

In the great town hall, which stands there today, nearly as it looked seven hundred years ago that summer morning, the burgrave and his chief nobles paced gloomily to and fro. They were in council.

"If we can hold out a week, nay, but three days longer, the summer heats will be here, and proud Otho's army will melt like wax in a torch's blaze. Only three days," said the ancient burgrave, stroking his long, gray beard and looking round upon his hunger-wan men.

And as he looked and pulled his beard, there was a shout in the street.

"Is the starving city in rebellion?" asked the old burgrave, with paling cheeks.

"Nay, not so," answered a young noble. "Look forth and see."

And now childish voices rose on the air, chanting a sacred hymn. Softly and solemnly it echoed through the narrow streets. The burgrave's grim face grew radiant. "God bless them!" he murmured.

Thronging the street were a thousand children, dressed in shining white, and each child carried in one hand a loaf of bread, in the other a branch of ripe cherries. They had saved their portion of the last distribution, and, laden with this and the first picking of the cherries, they passed through the gates and marched to the Emperor's camp.

Anxious eyes watched them from the battlements, anxious hearts waited forebodingly the result. But the children had been wiser than their fathers. No bannered host could have passed those gates to win the victory that those children won that day,

Stout Emperor Otho swore a great oath under his huge red beard, as he saw the train and the burdens they bore. "Of a surety the city overflows with food," he said, "and we had thought to starve them out. The summer heats have come, and we cannot stay here a twelvemonth. Surely Nuremberg's hand goes into every land."

And he sent the children back with kind words and kingly presents, and before the next sunrise the watchful sentinels on the walls saw the banners of the imperial host moving across the plain. Before the dew was dry on the meadows, the last spearman had disappeared behind the dark forest. Nuremberg was saved.

Every year since then, in memory of that day, the children of the old German city have kept this festival at the time of ripe cherries, and if you should go there to-day, you would see the pageant, which has lost none of its romance through the six centuries of years.

Mammy Joe.

FRANK H. SWEET.

Several men were walking back and forth upon the platform of a small way station in Virginia. They had been there ten minutes, and were growing impatient. At last one of them drew out his watch.

"Six minutes late," he said, discontentedly. "The F. F. V. will be losing its reputation if it doesn't make better time. I hate waiting."

"Perhaps your watch is wrong," suggested one of his companions. "We have been in the woods for a week, and our time may not be accurate."

"My watch is all right," was the petulant answer. "It is the railroad."

Crouching near the door of the station was a big, motherly-looking black woman. She had been there since early morning, arriving even before the station master himself. All through the long day she had remained in the same position, watching the trains as they arrived, and scanning each face eagerly. As the man put his watch back into his pocket she looked at him wistfully.

"Yo' don't reckon nothin's de matter, does yo, massa?"

"Oh, no; the train is only a few minutes late. Expecting some one?" as he noticed the pathetic eagerness in her face.

"Yes, sah! My lill' boy w'at's done been in de hospital two year, is comin' home; all cured an' fix up. De doctor sent word he'd put him on de F. F. V. an' sen' him straight frou. I war feared he mout mistook de train, so I'se been a watchin' all day."

"What hospital did he go to?"

"Bos'n. Yo' see Henry Clay got hurted whenst he war a teenty feller, an' he kep' agrowin' more an' more crooked, so't me an' my ole man war feared we moutn't raise him. We done hab all de doctors roun' hyer, an' at las' one tole us bout'n de plase in Bos'n whar dey done fix such t'ings. He writ for us, an' done make all de 'rangements. But hit cos' heaps o' money. Me an' my ole man hab to sell our lill' place an' go out to wuk. But we all aint car' for dat, so long's Henry Clay done got well. Bress de Lord!"

"I am glad they cured him," said the man, heartily. "But I reckon he's grown so big and handsome you won't know him when you see him."

"Bress de boy! Bress de boy!" ejaculated the old woman, between her smiles and tears. "White fo'ks mus' have dere jokes. But I reckon de boy is sure 'nough big an' harnsome by dis time. Me an' my ole man war jes' plumb 'stracted w'en we hern he war all well an' comin' home. We done hustle roun' an' got de money for his ticket, an' sont hit to him; an' now de doctor's done writ dot he's comin'. Bress de Lord for all his marcies!"

A shrill whistle was heard in the distance. The men gathered up their baggage and stood waiting. Tears of expectation began to stream down the old woman's face. It was a small station, and the train stopped but a few seconds. Only one passen-

ger alighted. He was a little black boy of ten or twelve years.

The old woman sprang toward him with an inarticulate cry. But she stopped suddenly. That was not Henry Clay. True, he did not have crutches, and did not even limp; but he was small and thin, and so weak that he staggered as he walked. And they had written that Henry Clay was strong and well.

The boy approached her timidly. "Is yo' mammy Joe?" he asked.

"I spec' so," fiercely. "But whar's Henry Clay?"

The small figure shrank back. "I done lef' him in de hospital. He war in de baid nex' me, an' he hear de doctor say dat I nebber git well, cep'n I go to a country dat's warm, an' hab good nussin.' But I hab no fo'ks to sen' me. I allers lib on de street."

"W'at's dat got to do wid Henry Clay?" The boy began to tremble.

"He—he done gib me his ticket, an' make me come. He say his mammy'll be my mammy an' make me well."

"An' ain't Henry Clay comin'?" Her voice sounded like the cry of some wounded animal.

"He—he done got a job washin' dishes in de hospital, an' is sabin' money. He say tell yo' he'll shore be home nex' summer, w'en he hab money 'nough. De doctors all like him an' say he fine feller. But is yo' goin' be my mammy?"

The old woman caught her breath sharply. Then she held out her fat, motherly arms.

"Yes, honey, I'll be yo' mammy."

Around Harper's Ferry.

ROBERT STAPLETON, JR.

The country in the vicinity of Harper's Ferry is extremely interesting, and this not only from the historical associations, but from the attractive beauty of the surroundings. The town itself possesses the tremendous interest of being the place where John Brown fought and was captured. Within easy driving distance are Antietam, where one of the greatest of the battles of the late war was fought, and Charlestown, where John Brown was tried and executed. To reach these places we pass through a country that is captivatingly attractive.

There are rich fields and beautifully cultivated farms. There are roads that are finely shaded by bordering trees. There are picturesque homes, vine-covered, and surrounded by beautiful flower gardens. Perchance a glimpse may be caught of some handsome woman standing within a porch, with her face framed among flowers. Perchance some toddling pickaninnies are seen, playing in the road beside some less pretentious home. The fences are of various kinds. There are the post and rail, and the post and board, and the plain wire, and the twisted galvanized strip, and the stone wall, and the wired rail, and even some of the "snake" rail. As a rule the fences are quite high, and they are usually well made and well kept.

The farms average perhaps 150 acres in size. Corn and wheat are the staples, but there is much of hay and oats as well, and also a variety of vegetables. On some fields both oats and wheat are grown, in alternate lines, without fences between, and such fields have an odd appearance when the wheat is cut and stacked and the oats are still standing. There are fine herds of cattle and numbers of good horses. Four-horse hay wagons are not infrequently met with on the roads, and the roads are kept in fairly good condition.

The larger homes are, as would naturally be expected, owned mostly by white people. The colored folks are, in general, quite courteous, and most of their men are manly and most of the women womanly. That strangers are looking up the sites connected with the war, and that they are in search of war relics as well, are commonly accepted beliefs among both white and colored residents, although such belief does not make them in the slightest degree annoying in their efforts to dispose of such relics as they may chance to possess. For my own part I wanted to obtain some Indian relics of the region, to compare with Indian relics from other sections.

High Literary Tone.—It is now 24 years that I have taken the AMERICAN AGRICULTURIST, and the approach of each number is anticipated with a good deal of pleasure. It is decidedly the best magazine of its kind published, and I could not get along without it.

WM. CAMFIELD, Morris Co., Kan.

OUR LITTLE FOLKS.

Who Loves Butter?

ANNIE HAMILTON DONNELL.

Who loves butter? Who loves butter?
Here they come, a tiny host—
Molly, Win and Baby Polly—
To see who loves butter most.

In a row now, hands behind you,
And each rounded chin hold up!
On Polly's chin the light is brightest
Over the flower's yellow cup!

A little way off, knee-deep in clover,
Jersey Mooley is watching the fun,
Opening her eyes in mild surprise,—
Who doesn't love butter, under the sun!

Who loves butter? Who loves butter?
Pick a buttercup and find out;
If under your chin its light shines in,
You love butter without a doubt!

Winnie and His Shadow.

E. LOUISE LIDDELL.

Winnie Scott was a brave little boy, though he was only four years old.

What he liked best of anything was to play soldier; perhaps that was because he had the same name as a great soldier.

His mamma had made him a little red cap and belt, and he had a little tin sword to hang by his side, and a wooden gun to carry on his shoulder, and when he got on his "oo-niform," as he called these things, and marched up and down in front of the house, people would exclaim, "What a brave little soldier!" And Winnie would say very proudly, "I'm General Winfield Scott."

Once he drove off a dog who came barking and snapping at mamma. It was a small dog, to be sure, but still it was a dog. And another time, when his cousin Mary, who was a young lady, didn't dare come in to his house because there was a cow feeding in front of the gate, Winnie went out with his little sword and drove the cow away.

So it will be seen that he really was a brave boy, in spite of what happened afterwards.

Now Winnie always had an early supper of bread and milk, and went to bed before lamplight.

But now on his fourth birthday, in October, mamma had told him that he might sit up until seven o'clock every night, and Winnie said, "I persume I shall like that better," and he thought he was getting to be pretty old.

But the very first evening of his "sitting up early," as he called it, the little soldier got badly scared.

The lamp had just been lighted, and he was walking round the room, when he saw something black on the wall right near him. Mamma saw him looking at it, and said laughing, "That's your shadow, Winnie."

But when Winnie saw that it followed him whichever way he turned, he got so frightened that he ran and hid his face in mamma's lap and sobbed, "Shabbers will bite."

"Is this my brave little soldier?" asked mamma, patting his curly head.

"Well, I am brave for dogs and cows," said Winnie, "but I don't know a shabber."

"Shadow, darling," said mamma. "Now come with me, and I'll show you that it can't hurt you."

So the little soldier dried his tears and faced the shadow bravely, and mamma showed him that it was there because he stood between the lamp and the wall, and the lamp couldn't shine through a little boy, and Winnie got all over being afraid, and pretty soon he said, "I'm so 'shamed I don't know what to do."

But mamma kissed him and said, the bravest soldiers get frightened sometimes.

A Little Story of Long Ago.

IDA KAYS.

"Many years have gone by," said the old gentleman "since the day that I am going to tell you of. Mother was a washerwoman and she was often obliged to leave us four children alone, to obtain money to buy food and clothing for us.

"She had a large cupboard in two parts, one standing upon the other. The upper and narrower half had glass doors and contained her dishes. We were very fond of sugar, and as mother could not afford to gratify our appetites and did not wish to put temptation in our way, she kept the sugar box on top of this tall cupboard.

"But one day I was very naughty and resolved to have some sugar anyway. I climbed on a chair, then onto the edge of the lower cupboard, steadying myself by one of the open glass doors. Yes, I could reach the sugar. Conscience whispered that I was doing wrong—that I was stealing, but I would not listen. I plunged my hand into the box. The door swung, I clutched it tightly, but lost my balance and down I went, and I was not all that fell—the cupboard and sugar box came, too.

"I was not much hurt, but it was a much frightened and very repentant boy that crawled from under the ruins of mother's prized cupboard. Oh! how sick I felt when I saw the broken doors and dishes. There was sugar there in plenty, but my appetite was gone. I will not tell you just what happened when mother came home, but you may be certain that I never wanted to steal sugar again."

Our Puzzle Corner.

We shall call our puzzle this month a literary acrostic, and shall give four prizes for its perfect solution. The first prize will be $2 in cash, the second a year's subscription to the AMERICAN AGRICULTURIST, the third a telescope, and the fourth a jackknife. If there are any ties the neatest and most tastily arranged list will have the preference. All answers must be addressed to the Puzzle Editor AMERICAN AGRICULTURIST, 52 and 54 Lafayette Place, New York, and must be mailed so as to reach us on or before September 1st.

LITERARY ACROSTIC.

1. A great traveler and prolific author, who was born in Pennsylvania.
2. A noted clergyman. He wrote many books, was editor of a paper and founded a magazine. He was a native of Massachusetts.
3. A minister who wrote many books. He was at one time mayor of a city, and served in the legislature, being once president of the senate. He was also a member of congress. He was born in New Brunswick.
4. Born in New Hampshire. He was a noted humorist, published a paper in Pennsylvania and wrote several humorous books.
5. A lecturer, and wrote much poetry and some prose. He also lectured on Shakespeare.
6. Born in Pennsylvania. He wrote novels, dramas and poems, and edited several newspapers and magazines.
7. Was also a native of Pennsylvania. He went to Boston, where he painted portraits, and published several books and poems.
8. A voluminous writer of juvenile stories. His books were so popular that they have been translated and published in several foreign countries. He was a native of Maine.
9. A professor of Hebrew and biblical literature, and a noted writer of religious books. He was born in Pennsylvania.
10. A native of New York. She wrote a drama at the age of ten and was one of the actors in it. She had a sister who wrote poetry at the age of nine, but who died at the age of seventeen. She was two years old at the time of her sister's death.
11. A professor of modern languages at Harvard, and a noted poet. He published a number of books. He was a native of Massachusetts.
12. A native of New York. He wrote for many publications. His principal work was a burlesque chronicle of his native city.
13. Wrote many books on arithmetic, algebra and surveying. He was born in Massachusetts.
14. A noted authoress. Born in New Hampshire. She edited several women's magazines and wrote many books. The most prominent was the Woman's Record.
15. A noted writer of popular anti-slavery books. He was a native of New York.
16. A Unitarian divine. He wrote many books on the Bible, and made a translation of the New Testament. He was a native of Massachusetts.
17. A noted lawyer and infidel lecturer. A native of New York.
18. Born in Prussia, but came to this country with his parents when very young. He learned the printer's trade. Afterward became a sailor, and later wrote many books on travel, etc.
19. Wrote several books, and was an editor of renown. He was a native of New Jersey. He married a daughter of William Cullen Bryant.

The initials of the last names of these nineteen literary Americans describes something that we all expect in August. To some it is grand, to others awful—while it is beneficial to all.

THE ANSWER TO THE MAY PUZZLE.

*F*orget-me-not,	*P*each,
*L*ily,	*O*range,
*O*rchid,	*M*elon,
*R*ose,	*O*live,
*A*ster,	*N*ectarine,
	*A*pple.

Flora—Pomona.

THE PRIZE WINNERS FOR MAY.

1, Daniel K. Boemers, New York; 2, Ruth Scott, Minnesota; 3, Mrs. M. A. Preston, Michigan; 4, Eli W. Gibbons, Ohio.

The Rocky Mountain Burro.

To a stranger, perhaps the most amusing thing about life in the Rocky mountains is the mode of transporting ranch products to the market. There often being but a narrow trail leading from the foot of the mountain to the ranch, everything must of necessity be transported to and exported from the ranch by means of pack donkeys or burros. During the afternoon before the day set for going to market, the donkeys are shut up in a corral, and the potatoes are sewed up into bags of seventy-five pounds each. In the morning the donkeys are saddled with the ordinary pack saddle. A sack of potatoes is roped on each side of the saddle and between the sacks are placed one or two cans of butter, and one or two heads of cheese. On top of all this, partly to keep the hot sun from the butter and cheese, and partly as food for the donkeys during the night spent in town (as it requires a day on the road each way), are placed a couple of long sacks stuffed full of rich oat straw. This makes a complete pack for the donkey, which, sometimes, is somewhat larger than the donkey himself.

From fifteen to twenty small donkeys are packed and started off down the trail, the driver following in the rear on horseback. In order to keep the train moving, one has to do a considerable amount of yelling, and, perchance, being away off in the mountains where the sound of one's voice will not be heard by any human being, he may resort to some profanity. Occasionally a pack which has worked loose will require straightening up. To one not accustomed to the habits of the donkey, it is a very trying task to make one of these trips. Now and then one of the donkeys will wander out of the trail, get wedged between a couple of trees, and quietly wait for the driver to release him, or perhaps tear his pack on a rock or a snag, and strew potatoes on the ground for several rods before the driver can stop him.

Occasionally the lead donkey will find a nice tuft of grass in the trail, and will stop and proceed leisurely to nibble at it, thus stopping the whole train for some time. At times, when down in the valley, some one of them will recall some Mexican's garden some distance ahead, and he will start off on a lope, followed by the whole train. One is then sure to meet with a catastrophe; one or two packs are bound to come undone, and cans of butter, cheese and potatoes will be strewn along the trail.

B. H. ARTHUR, Sante Fé Co., N. M.

The Savage Islanders.

When Captain Cook sailed from the Sanga, or Friendly Islands, as he called them, toward the Hervey group, he discovered a small island, the natives of which—to use his own words—attacked him "like so many wild boars." He called the place Savage Island, and sailed on. He did not know the reason for the ferocity which he encountered. These natives dreaded disease, which they thought always came from some other land than theirs, and they put to death not only all newcomers, but returning natives who had been away some time. The dead bodies were disposed of so that no contamination might reach their little island, which they believed was naturally free from sickness.

On my tour around the world, I met Rev. W. G. Lawes, the missionary, who had charge of Savage Island for many years, and who is now stationed at Port Moresby, in New Guinea. He informed me that on Niue or Savage Island, only thirty miles in circumference, the population numbers 5,000, and nearly all are Christians. They send out mission teachers, subscribe regularly to mission work, and have furnished the money to build a schooner, which was launched at Sydney, and which is used by Mr. Lawes along the New Guinea coast. Mr. Lawes looks like one of the Patriarchs, with his long, silvery beard, his handsome face, and towering form. He is a practical farmer, as indeed most missionaries in the Southern seas have to be. "What do you think ofa people who never use tobacco?" said the old pastor of the Niuans of Savage Isles. These savages never used the weed. They were never cannibals as the inhabitants of neighboring isles were. Their morality was much higher, too. They were always good canoe builders, ornamenting them with shells and mother-of-pearl. Another curious feature was the way in which they punished criminals—strapping them to trees for minor offences—and starving them for a time. If anything at all was allowed, it was some bitter fruit. Although the Niuans painted their bodies, they did not tattoo them as the Samoans and Marquesans do. In many other respects the Niuans differed from the people of Polynesia. Their dead were taken to the woods, laid on a rude bench and left to decay. Then the whitened bones were brought back and buried in limestone caves. Another method was like the old Norse custom of sending the dead to sea. The body was placed in a canoe and sent adrift on the wide and lonely ocean.

H. S. RENTON, Queensland, Australia.

Farm Soils of Australia.

The soils from Devonian and carboniferous rocks of Victoria give fair pasturage. The limestone tracts support a good soil, and in the greater part of the southern portion of the colony, a soil derived from a yellow sandstone contains a large proportion of phosphoric acid, and is highly productive. The triassic and oölitic rocks yield in the low, flat country a poor, sandy soil. On the Barrabooe hills and western part districts the soil is deep and exceedingly fertile. The Cape Otway ranges are unsurpassed in the colony as a timber-producing district. In the district occupied by tertiary formations the soil is sandy on a subsoil of clay. On and around the margins of flooded ground the soil is a rich, black, sandy peat, well adapted for agriculture. A rich soil is almost invariably accompanied by a luxuriant growth of lightwood (*Acacia melanoxylon*). The northwest tertiary area is mainly covered with a dense growth of mallee scrub (*Eucalyptus dumosa, E. oleosa*), etc. The post-pliocene and alluvial formations invariably afford good soils, especially so when derived from the denudation of volcanic and calcareous rocks. Having such extensive areas of fertile soil in all parts of the colony, and consequently, under different conditions of climate, the products of the colony are both abundant and varied. The average produce of the principal crops in the neighboring colonies of Victoria, New South Wales and South Australia are:

	Wheat. *Bush.*	Oats. *Bush.*	Barley. *Bush.*	Potatoes. *Tons.*	Hay. *Tons.*
Victoria,	11.65	20.93	19.84	3.45	1.23
N. S. W.,	14.06	20.27	19.65	2.81	1.32
S. A.,	7.59	12.93	12.59	3.38	1.10

The extent of land under cultivation in Victoria in 1890 was 2,627,262 acres. Land in fallow is included in the area under tillage. The number of acres in this condition in 1890 was 379,701. There were also 29,243 acres of land under gardens and orchards. The average area returned as in cultivation to each person in the colony, on a mean of nine years, is 2.31 acres. Of every thousand acres cultivated during 1890, 449 acres were placed under wheat, 90 under oats, 35 under barley, 18 under potatoes, 172 under hay, and 237 under other tillage. The total number of farm buildings visited by the collectors of statistics in 1890 was 36,497.

D. E. MARTIN,
Secretary for Agriculture, Victoria, Australia.

The Sunflower State.

One gets a very good impression of the agricultural situation of a country through a car window, provided he rides by daylight, and with the idea of seeing what he sees. Even the casual observer cannot but notice the rapid strides agriculture has made in the Missouri Valley within the past twenty years. Then in passing through Missouri and Kansas I saw miles of unbroken prairie, with an occasional settlement, and at rare intervals the pioneer farmer and his rude home, with, seemingly, few home comforts, and no home for his stock. Now the same houses have been replaced by modern ones, and are surrounded by noble trees, and well painted fences. Good and ample barns are becoming quite common, and there is an air of prosperity and thrift everywhere.

The original prairie has gone, the miles of wild grasses are replaced by miles of wheat and corn fields. A large proportion of the farms between Kansas and Chicago are devoted to grazing, and stock in better condition one could not wish to see; and to behold a herd of fifty or more head, as I often did, is about as beautiful a sight as the country affords. On my visit twenty years ago, I saw the osage-orange hedge everywhere following civilization; it was then new, or relatively so, to the country, and it was considered indispensable. Stock companies were formed to plant and care for the hedges for a number of years, to be paid on the installment plan. These are fast disappearing; the living fence is found to be an expensive one, a parasite that feeds voraciously on the fields it protects. The farmers are getting rid of them as rapidly as possible, but it is no easy task, as the trees have formed a network of roots that cannot be exterminated without an immense amount of labor, and they must be gotten out, or plowing would simply be impossible, as roots one inch in diameter would effectually check the progress of the best steel plow drawn by four horses, and the roots will remain in the ground for many years without rotting. The barbed-wire fence is now generally used instead.

The people in the Missouri Valley are very proud of their country, as well they may be, for a more beautiful one cannot be found on the face of the earth, or one that has more natural advantages for the agriculturist. They are proud, too, of the progress they have made, of the cities they have built and of their various institutions. In taking a short drive out from the thriving town of Paola, Kansas, I noticed in many places piles of manure that had been thrown into the ditches; I asked the cause of this, and was told that the stable men threw it out there to get rid of it, as the farmers would not have it on the rich bottom land; when they did, the pototoes would be all tops and no bottoms, the wheat all stalk and no kernel. But, he regretfully said, he supposed they would have to use it some day.

C. L. ALLEN, Douglass Co., Kansas.

From Puget Sound.

While at the World's Columbian Exposition, last summer, I met two young men who were desirous of emigrating to the State of Washington, and obtaining from the United States government a farm each in the newly opened, irrigated sections of this rapidly developing State. As they did not desire to start out on this kind of pioneering work in the winter months, I invited them to come to my home, and they are now with me here in Seattle, on the shores of Puget Sound. It is amusing to me, an old-time Puget Sounder, to watch the impressions of this unique region, as they are daily manifested from the minds of these men.

First, the great forests of evergreen trees are always an object of interest, and the names and natures of the different kinds of trees are eagerly sought out. Then the birds and animals, the grouse, quail and pheasants, and the deer, elk, bear, congers, coons, and wild cats are studied, and the time for a good, long hunt in the great forests is awaited with considerable impatience. Next, the shores of Puget Sonnd, that great arm of the Pacific ocean, are a new world of wonders; and here again is awakened a desire to know all about the aquatic birds abounding in countless numbers, and fishes of many kinds, as well as the crustaceous shell fish, and the vast array of sea life of all the lower as well as the higher orders.

This intelligent curiosity is, of course, surprising to one familiar with all these objects from childhood, but its manifestation tends, in a large measure, to explain the desire expressed by so many thousands at the World's Fair to visit the new Northwest, and to spend a season on Puget Sound, to study its wonders of land and sea.

EDMUND S. MEANY, Kings Co., Wash.

The San Antonio Horse Market.

San Antonio is one of the largest horse markets in the Lone Star State, though the demand for range horses has not been so good for the last few years, and the shipments have lessened materially. There is always a demand for well broken and matched driving teams, at good prices. Well-bred, unbroken colts can be bought cheaply.

It is wonderful what a great change a range horse undergoes, when given the proper treatment. Take one of the native colts of Texas as he stands on the prairie, wild as a deer, long mane and tail reaching to the ground, with a dirty, rough coat of hair hanging to his legs. Halter, break and handle him well. Do not forget to use the currycomb freely until you have reduced his

coat of hair. Feed him on good oats and wheat bran mixed, letting him run on a good pasture if you have one. You will find that you have a different animal, with a sleek coat of hair, trim legs, fine mane and tail, and full of life and nerve. Such a trained horse finds a ready sale.

W. L. MOORE, Denton Co., Texas.

On the Trail to a Mountain Ranch.

In looking westward from Las Vegas, one's attention is at once attracted by a lone bluish peak, which looms far above the surrounding mountains, and which is still further marked by its bare and abrupt face. Its name, "Old Baldy," is quite significant of its general appearance. Though apparently but a short distance from Las Vegas, the peak is over twenty miles distant. The natural beauties which lie in the rear of this ragged rock could scarcely be imagined by any person who has not visited the famous "Harvey's Ranch."

From Las Vegas Hot Springs, a winding road along the mountain sides and through ravines leads one through several Mexican settlements, and we at last find ourselves between two high mountain ranges. A rumbling, bubbling stream of pure mountain water, rushing down the valley, over huge boulders and through narrow crevices, adds greatly to the wonders of nature which are met with on all sides.

Much labor has been expended by the mountaineers, during leisure winter months, in constructing very primitive, yet durable, bridges from pine logs, also in grading elevated points and filling up narrow ravines; so that a wagon road now leads some six miles or more up this narrow valley. However, this road finally comes to an end, and the remainder of the journey is accomplished on horseback, or on the back of a little Mexican donkey. We now begin a steep ascent, along a narrow trail at a vertical angle of nearly thirty degrees. The burros step carefully here. On arriving near the summit of this mountain, which, however, is not until after a two hours' climb, the trail leads through a dense growth of quaking-aspen so close together on each side of the trail that a man can only with difficulty make his way among them. Ten years ago these hills were alive with deer, and one could not pass along this trail without seeing two or three of them feeding in some open place, or making their way through these saplings.

We come out on an open knoll covered with fine grass for grazing purposes. This fine grass is not allowed to go to waste; for we soon perceive a large number of cattle, horses, and donkeys feeding in perfect contentment. We pass on for two or three miles further, and find that there is no lack of this fine pasture land, there being several hundreds of acres of it.

This ranch is 9,650 feet above sea level. The thermometer seldom rises above 60° or 70° in the summer, and scarcely below freezing in the winter. The surrounding woods are full of bears and pumas, but the deer which were so abundant a few years ago have been frightened back toward the main range.

ARTHUR H. BROWN, Santa Fe Co., New Mexico.

SEMI-TROPICAL VEGETATION OF NEW SOUTH WALES.

Australian Forest Trees.

The surface of New South Wales presents a vegetation characterized by little variation of form or color. The dense foliage and varieties of tints with which the Old World is familiar, are not found in Australia, where the dull evergreen leaves are little affected by the changes of the seasons. What the flora of the country lacks in picturesqueness, however, it makes up in usefulness. The country covered by timber may be divided into the three classes of open woods, brush, and scrub forests. Of these the open forests predominate. The varieties of trees are chiefly species of the eucalyptus genus, and melaleuca, callistemon, and other genera of the myrtaceæ order. On the river flats immense specimens of flooded gums, *Eucalyptus rostrata*, and Australian apple tree, *Angophora subvelutina*, mark the course of the streams. The box, which grows on ridges and mountain sides, is used chiefly for firewood. Ironbark, *Eucalyptus leucoxylon* and *E. paniculata*, is a tree of moderate size, with heavy timber, famous for its great strength, fine specimens bearing a tensile strain nearly twice as great as the best oak. The timber of the blue gum, *E. goniocalyx*, is in great demand, owing to its comparative lightness, and is easily worked, being used for all purposes to which hard wood is applied. Stringybark or messmate, *E. eugenioides*, is a large tree with useful wood, and a peculiar fibrous bark, extensively used for roofing and for paper making. The bloodwood, *E. corymbosa* is used for fences and for railroad ties. The gray gum, *E. tereticornis*, is hardly inferior to the ironbark. Tallowwood and white top are other species of eucalyptus. The turpentine tree, *Syncarpia laurifolia*, is used for piling and other work in salt water. In the brush forests are found the Australian red and white cedar, the tulip-wood, the pigeonberry tree, the colonial pine, and the native beech. The scrub forests are found in poor soils, and contain chiefly pine, acacia, and eucalyptus. Australian hardwood trees are remarkable for the great size of the timbers which may be obtained from them, as well as for the extreme toughness and durability of their wood. Many are easily worked, and are adapted to ornamental purposes.

[Our illustration represents a view in the fertile Illiwarra district, in New South Wales, Australia, showing various forest trees, with the Pacific ocean in the distance, and characteristic semi-tropical vegetation in the foreground.]

T. A. COGHLAN, Sydney, N. S. W.

Raising Water by Water Power.—B. D. T., Orange City, Fla.: There are many circumstances in which the power of flowing water may be used to raise a supply of water for use on farms, and even in cases in which the stream has not sufficient fall to be dammed. Every one knows of the stern-wheel steamboats that navigate the shallow streams of the West and South. These afford an instance of the kind of wheel to be used, simply a large one with paddles or floats, on the ends of the arms, by which the current of the stream turns the wheel, and by means of proper gearing the motion is conveyed to a pump, by which the water of the stream may be raised through pipes to any reasonable height and distance. A stream nine feet deep and one hundred feet wide flowing four miles an hour will exert a very great power. A common float or paddle wheel twenty feet in diameter working in a stream of this kind will make four revolutions in a minute, which, by cheap gearing, may operate a pump with sixty strokes a minute. Just what the actual power might be, is hardly worth the time of figuring up, but it would be much more than ample to raise water sixty feet in sufficient quantity to irrigate twenty to forty acres of land. The cost of such a wheel would be quite small, not over fifty dollars certainly, and it will cost nothing to run it but a little grease. The wheel described should be submerged eighteen inches in the water, which will be the width of the floats. If more power is desired, the floats may be increased in width. It will be the square feet of area of each float submerged at one time that will be the measure of the power in a uniform current.

Floor Paint.—Mrs. Jessie Jackson, Nodaway Co., Mo.: In using yellow ocher for painting a floor, use boiled linseed oil, adding about one tablespoonful of liquid dryer to each quart of paint, when mixed ready for use. This dryer can be had of dealers in mixed and other paints, or, perhaps, at the nearest grocery. Apply two coats to the floor, and the first should be rather thin, with a little spirits of turpentine added, which will assist in making the paint strike in and stick to the boards. A half gill or gill of the turpentine, to each quart of the paint, will be sufficient. If it is an old floor, then it should be well cleaned, using some washing powder in the water to remove grease likely to be on the surface of the boards.

Layering Magnolias.—F. C. D., Essex Co., N. J.: All of the magnolias are readily propagated by layers, but those that assume the tree form rarely have any branches near enough to the ground to admit of this mode of propagation. Most of the Chinese and Japanese magnolias are usually trained as bushes, or allowed to grow in this form for several years after the small plants are set out, consequently their lower branches are in a convenient position for layering. If these are bent down, and a portion covered with good, rich soil in early spring, they will, in most cases, produce roots enough on the buried part to admit of removing from the parent plant the ensuing autumn. But if not well-rooted at this time, they should remain undisturbed another season. Where the soil is naturally a dry one, a shovelful of coarse manure or leaf mold may be thrown on the surface over the layer to assist in retaining moisture, and this will insure the production of new roots from the buried wood of the layered branch.

Origin of Breeds of Fowls.—H. W. Baxter, Middlesex Co., Mass., desires to know: 1st, the origin of the Light Brahma; 2d, of the Plymouth Rock; 3d, of the Brown Leghorn; and 4th, of the Buff Cochin. Also, 5th, what would be the cross of Light Brahma hens and Brown Leghorn cock. (1.) The origin of the Light Brahma is not absolutely known, but the best evidence seems to show that it came from China. The early birds had both single and nub combs, but finally the new comb appeared and dispersed all other styles. (2.) The Plymouth Rock was produced in different parts of New England from various crosses. Dominique and Black Java, Dark and Light Brahma, Pit Game and other blood have been used in its production. (3.) The Brown Leghorn, at first called Red Leghorn, was received directly from Leghorn, Italy. (4.) The Buff Cochin is of Chinese origin, and a lineal descendant of the old Buff Shanghai, the cocks of which were occasionally able to eat corn off from the top of a flour barrel. (5.) The cross of a Brown Leghorn cock with Light Brahma hens, would give birds of medium size; lightly feathered on the shanks, uncertain as to comb, and of mixed red, white, and black in the plumage. They would be good layers, quite rapid growers, and would make fairly good table poultry. A better cross would be to use a White Leghorn male in the place of the Brown, as the birds would be more uniform in color, and of equal quality otherwise.

Eggs Broken Before Being Laid.—Frederic Gage, La Comese Co., Wash., writes us that he had several hens die, and examining the bodies, found eggs broken inside the egg sac. The fowls are fed with wheat, have a good run of three acres of grass, with plenty of shells and bones lying about. The cause is probably dependent upon want of lime and too long confinement to wheat alone. Slaked lime, old plaster, crushed bones and shells, are indispensable. Too much fat may prevent laying, or high roosts may cause injury in flying from them so as to break the eggs before having been ready for laying. Vary the feed with corn, oats, and peas. A mixture of pounded charcoal ten parts, slaked lime twenty parts, with one part of salt, well mixed and kept under cover, will be of service to fowls.

Stoneless Peaches.—J. L. B., Ocean Co., N. J.: The man who claims that peaches grafted on willows will be seedless or stoneless, is very extravagant in his claims, but the trouble is to make the peach grow on a willow stock. If any one has ever succeeded in making either a bud or cion of the peach unite and grow on a willow, we would be pleased to have him report the fact and produce the tree, where it can be examined by some one who knows the difference between the two kinds of trees.

Aquarium Cement.—B. D. Austin, Knox Co., Ohio: An excellent aquarium cement, and one said to be used in the Zoölogical Gardens, of London, Eng., is made of one gill each of litharge, fine white sand, and plaster of Paris, and one-third of a gill of finely pulverized resin. Mix thoroughly and make into a paste with boiled linseed oil, to which a dryer has been added. Work over and beat up this paste and let it stand three or four hours before using. In using be careful to have all the cracks filled in solid and smooth, and then leave the aquarium to become dry before filling with water. This cement will answer equally well for either salt or fresh water. An insoluble cement can be made with glue by adding a little bichromate of potassium to the water in which the glue is dissolved, and then expose the glued parts to the light.

House Drains.—A. A. Kismet, Morgan Co., Tenn.: The air of cesspools connected with the kitchen are sources of imminent danger. These badly-arranged drains from the house, or those used for water-closets, contain impure air. Were it not for the bad odor arising from them, they would never be cleaned out and disinfected. Such drains from the kitchen should descend at a considerable angle from the house, and also for a considerable distance. They should terminate in a large sand-pot, and be ventilated with a wooden chimney shaft, so high as to freely disseminate the foul air out of reach of the house. Strong aqua ammonia, or a solution of caustic potash in hot water should be frequently poured down, to convert the grease into soap, which would keep the drain cleaned, thus preventing the stoppage of the drain. The sink in the kitchen should have a proper trap, and a wet mat should cover the top of the drain pipe at night, and thorough ventilation of the kitchen should be the first order of the morning.

Muscular Exercise.—L. M. Dover, Shawnee Co., Kansas: Loss of muscular exercise for only two or three generations entails upon their offspring dwarfing tendencies of body and mind. Worse, it produces an enfeebled vitality, which predisposes to both mental and bodily disease—imbecility or insanity—or to poverty of blood, or to tuberculosis or other diseases. The external work that a man can do daily is estimated to be one-seventh of that of a horse. And though this is too high an estimate, yet, relatively to weight, a man can kill a horse by daily long and severe work. The work of a horse is estimated to be equal to a one-horse-power steam engine, which can raise 33,000 pounds one foot per minute, or 8,839 tons raised one foot high in ten hours. A steam engine can be pushed to great extremes by ample supply of fuel, but neither man nor horse can endure his utmost work for a long, continuous period of time without utterly breaking down. A man or a horse can run at the utmost speed capable of only for a minute, or only for a few minutes at most. Foot races, boat races, and short races on the turf, all require a reasonable rest and preparation.

Sanitary Measures.—H. M. Marl, Geneva Co., Ala.: Water-closets having no sewer connection may be kept clean and sweet by having the vault arranged to have a trap door on the back, the vault being a large box, so that earth may be thrown in daily, and removed in a semi-cold, odorless, or nearly odorless state, and deposited in the manure pile or vault. These water-closets should have chimneys or ventilators running above the roof. Copperas will remove odors.

How to Have Healthy Chicks.—H. S. Armstrong, Erie Co., N. Y., writes us: Poultry raisers will find it to their advantage to use sulphur and grease on young chicks. This I have used for years on my flock of Plymouth Rocks, raising from two hundred to three hundred chicks annually. Apply to the top of the head and under each wing as soon as the chicks are hatched, and again in about ten days or two weeks.

Tile for Drainage.—T. D. Mascot, Lancaster Co., Penn.: Unless you have at hand suitable flat stones, and the bottom of the underdrain is firm and hard, tile only should be used. When the bottom of the drain is soft and the common tile liable to settle, use horseshoe tile, placing a board a little wider than the base of the tile in the bottom of the drain. The boards should be cut to a length that the joints of boards and tile will not meet. Boards thus placed will last for several generations, as their location insures their being continuously filled with water; except, perhaps, at a few feet of the outer end, this may need renewing after a term of years. If boards are expensive, or not easily obtainable, a flat stone should be laid under each joint. Underdraining is expensive, and proper care should be used in its construction, for upon its efficacy and durability depend the future profits in crops.

Balky Horses.—D. B. Knox, Vinton Co., O.: When a horse acquires the habit of being balky, at that moment it is for general purposes reduced one-half in money value. There is no habit more disagreeable or vicious except that of the runaway or the kicker. The worst feature of it is that the driver is, nine times in ten, the cause of balkiness in horses. Too frequently it is caused by overloading or working them until weak and wearied, and as they find relief in resting they resort to it oftener than the driver desires. The whip is applied, and if the animal is of a nervous disposition it resents it, or starts with a jump. If the load does not move promptly, the horse flies back and twists about. Another trouble is working horses with sore shoulders. This is observed after a few hours or a night's rest. The muscles are sore and inflamed. The pain causes them to flinch, and unless the driver is very considerate, trouble is liable to ensue. This is more especially observed with colts or young horses. Hence, be on guard yourself, also impose great caution on the driver, for too frequently a careless driver will reduce the market value of a horse fifty dollars in an hour.

Cucumber Pickles.—I. M. Bradshaw, Marion Co., Wash.: To put up a few jars, or even barrels, of cucumber pickles for home use is quite a different thing from engaging in such an industry for commercial purposes and for profit. For instance, we have a friend with whose operations we have been familiar for the past twenty-five years, and although he has at last been quite successful, he saw no profits for the first ten or twelve years, and some of the time there were heavy losses. To make a business of making pickles a man must first learn the trade in advance, or by dear bought

experience, and that, too, in the locality where his factory is erected. What a man has done in New York, Illinois or Wisconsin can scarcely be repeated in Washington further than in the handling of the cucumbers after they reach the factory. Then comes the washing, salting, packing, testing the brine, and testing of the vinegar to be certain that it is neither too strong nor weak, and a hundred other things which cannot be known in advance, because no one can be certain whether this or that will not turn up when least expected. If you can be sure of a crop of cucumbers sufficient for five to ten thousand barrels annually, then it may be well for you to secure the services of some experienced man to take charge, or show you how to put up cucumber pickles for the market; if not, then our advice would be to keep out of the business, unless you want to lose the capital you may put into it.

Importing Farm Products.—Leslie Brown, Summit Co., O.: We do import large quantities of some of our most common farm products, and of which it is quite reasonable to suppose our farmers ought to raise all that is needed for home use. For instance, of such a simple and easily raised crop as potatoes we imported last year over four million bushels, and for which we paid almost two millions of dollars. We also imported more than one and a half million bushels of beans, paying on an average about one dollar per bushel, and we sold wheat at an average of fifty-four cents a bushel to pay for these potatoes and beans.

The Crandall Currant.—E. O. Thorp, Daviess Co., Ind.: The leaf you send looks very much like that of the Crandall currant, which is a variety of the wild native currant of the Western States, the *Ribes aureum* of botanists. Whether this variety will prove worthy of extended cultivation is a question to be determined by experience, but we very much doubt if it will take the place of the older and better known currant of our gardens. Give it a fair trial and report the results.

Alkali Spots.—James Dixon, Burleigh Co., N. Dakota: The so-called alkali soils and spots seen upon many of the high and dry western prairies are not due to an excessive deposit of potash, but to carbonate of soda. If it were potash then these soils and barren spots would be exceedingly fertile instead of as now unfertile. On some large tracts of land this deposit of soda goes down so deeply that there is no water to be found by digging wells which is not strongly impregnated, hence unfit for domestic use or other purposes. The would-be purchaser of western lands should be on his guard against this defect in the water supply, for without good and pure water the richest lands in the world are absolutely worthless.

Getting Rid of Trees.—Bernabie Arteaga, Minas, Cuba: In attempting to destroy large forests and clearing the land for cultivation, the best way to kill the trees and roots is to girdle them one year in advance of cutting. That is, cut out a ring of bark say three inches wide, and deep enough to remove one inch or more of the sap wood underneath. By such means the downward flow of the sap of exogens, or outside growers, is effectually cut off, and, while the tree may live for a season after girdling, it will be found when dead to contain very little sap or moisture, and the wood will burn much more freely than if felled without previous girdling. This girdling of forest trees was almost a universal practice among the pioneers in the heavy wooded regions of our Northern States. When your trees are cut down they should be sawed into lengths of about a dozen feet, then be blown into pieces with dynamite. The stumps may also be blown out or blown to pieces by the same agent, and for one-fourth the cost of removing them by any other means.

Insects in California.—R. Leonard, Rockland Co., N. Y.: The fruit growers of California and Oregon have been exceedingly fortunate, not only in the way of a favorable climate, but also in their exceptional freedom from insect pests. We notice, however, in recent reports of the experiment stations and fruit growers' associations that several of our common fruit and fruit-tree pests have made their appearance on the Pacific coast, and it is just possible that there is trouble ahead for the orchardists of these regions. It is not so many years ago that our fruit growers in the Atlantic States began to suffer any very severe losses from the attacks of the codlin moth on the apples and pears, or curculio on their plums, crab-apples, quinces and cherries, and if you should move westward to get rid of these pests you might not find just what you are seeking.

Value of Testing Milk.—L. B. K., Bridgeton, N. J.: A Babcock tester is easily operated and it will pay for itself in a short time. There are but few dairies in which one cannot find, by the aid of this simple machine, one or more cows which are not earning their living, and this is what makes so many dairies unprofitable.

The Sex of Pigeons.—H. Carter, Howard Co., Md., wishes to know how to tell the sex of pigeons. This is sometimes quite difficult to do, as a very fine male and coarse female look very much alike. But generally the sex can be told, because the male, as a rule, has a larger and coarser head, thicker neck, and greater size than the female. The voice, too, is usually deeper in the male than the female. If one will catch a cock pigeon he will usually throw up his tail, while a hen pigeon will throw her tail down. The bones at the vent are further apart in the female than the male. If one has a bird of whose sex he is in doubt, if he will cage it with one whose sex is known, he can generally tell the sex, as a male pigeon will "play up," that is, drop his wings, inflate his crop, and pay attention to the other bird, very much as a cock fowl will act towards a hen. But sometimes all signs fail, and one has to wait until the bird goes to nest, when, if it lays, he can be sure that it is a female.

Butter Breeds.—Butter Maker, Skaneateles, N. Y.: Jerseys and Guernseys are both admirable cattle for a butter-making dairy. We cannot tell you which is best, further than to say, examine them and the one which pleases your fancy best will be the best for you. They are preëminently butter breeds—they stand at the head of the bovine procession for the production of butter.

Cherries for Family Use.—H. C. Collum, Chester Co., Pa.: You cannot do better in the Morello line, for family use, than to plant two or three trees each of the Early Richmond and Montmorency. The latter is ten days later than the former, and the two will give a season of nearly or quite a month. In making your list of other cherries be sure to get one Downer's Late Red—a hardy, productive sort, and which seldom or never rots. It is of the heart family.

Warts on the Heads of Chickens.—Mrs. W. S., Galveston, Texas, says that she is quite successful in raising chickens until May, when there appears upon their heads, eyelids, and beaks, large bunches or warts, which grow to immense size, and seem to debilitate the birds so much that they finally die. She suspects that mosquitoes are the cause. This is probably the disease known as yaws, very similar to, if not precisely the same, as the chicken-pox. The treatment for this consists, first, in perfect cleanliness of quarters; second, in anointing the bunches with a mixture of salt and lard, well rubbed in; and third, in giving the birds some sulphur in their food, and iron in their drink. If mosquitoes are really the cause, a little oil of pennyroyal mixed in the lard and salt, will have a tendency to drive the mosquitoes away.

Cold Storage for Produce.—W. W. Heech, Cumberland Co., N. J.: The temperature to preserve food substances by cold must be at or below the freezing of fresh water. Substances so preserved should be gradually thawed before they are cooked, either by boiling or baking. Meats that are naturally tough are greatly improved by freezing, and when frozen may be kept as long as one desires. The preservation of meats in refrigerators on ocean steamers has been found very advantageous, not only for consumption on the voyage, but as a supply for foreign markets. The preservation of fruit of various sorts by cold storage, in what are sometimes called retarding houses, has been largely tried for a number of years. It is found to be a valuable method of keeping the fruit whenever there is a glutted market. But it is not desirable for a great length of time, as some of the fruits so preserved soon lose their fine flavors, and depreciate in value. The average temperature for success in cold storage is found to be between 32° and 40° F. If peaches are kept in this degree of cold for a fortnight they will lose their flavor. Pears like the Bartlett keep well at 38° F. for three weeks, but are worthless if the time be extended to three or four months. The different varieties of both pears and apples vary considerably in their keeping qualities, both in and out of cold storage. With the exception of peaches, experience indicates that the most delicate skinned fruits may be kept in cold storage all the time it is necessary, without perceptibly losing their flavor.

Feeding Chickens—Lice.—Subscriber, Pulaski, N. Y., makes the following inquiries: "How long after hatching should small chickens be fed on eggs, and what should they be fed afterwards to prepare them for market? What should be done to rid chickens of lice?" It is not absolutely necessary to feed chickens on eggs at all. The following will be found a good method of feeding: Take equal parts, by measure, of steam-cooked oat meal, wheat bran, very finely cracked corn, and beef scraps. Mix and feed dry. Give chickens pure, fresh water. Feed this until they are four weeks old; then add to the mixture one part of wheat, and let the cracked corn be coarser. They can be fed on this mixture until ready to market, will make good growth, and be nice and fat when killed. For small lice use insect powder, fine coal ashes, sulphur, snuff, or any similar preparation, liberally sifted into the feathers. For large lice on the heads, anoint the top of the head with lard, a bit the size of a small pea being sufficient for each chicken. Do not grease them anywhere else.

Remedy for Plum Rot.—S. C. B., Bridgeton, N. J.: The ammoniacal solution of copper will, we believe, be thoroughly effectual in preventing the rotting of your plums. Three or four sprayings, the first one just before the buds break and the last about two or three weeks before the fruit is to be picked, will probably be effective. The formula for the solution is one ounce copper carbonate, ammonia enough to dissolve it, and nine gallons of water. Prepare the carbonate in large bottles or carboys, where it will keep indefinitely, diluting it in the proportion named when wanted.

"The Dairy Trust."—An esteemed subscriber in one of our cities refuses to renew for another year because he considers the AMERICAN AGRICULTURIST to be the organ of "the dairy trust." He does this because of our efforts to have bogus butter compounds sold for exactly what they are and at bogus butter price, so that consumers who buy oleo or butterine may not be swindled into paying an honest butter price for a fraudulent article. Because of such attitude our disgruntled friend has "no more confidence in this journal than he would have in a paper that worked for the sugar trust." Because oleo when properly made may be healthful, is no reason why the public should be swindled into paying a butter price for it under the impression that it is butter. Let that stuff be sold and consumed for exactly what it is, and dairy farmers will not complain. It is because oleo has forced its way into the markets, masquerading as honest butter, that it has reached such a large sale. Against such fraudulent practice the AMERICAN AGRICULTURIST protests, and proposes to keep up the fight. As to "the dairy trust," this is the first we had heard of it, and it will be news to the million or more struggling dairymen of this country.

Growing Radishes.—J. J. Newell, Oneonta Co., N. Y.: It is almost impossible to grow radishes in a heavy clay soil. They like a warm, light sand or loam, the former being best. Select some convenient spot for your work. Cover it three or four inches thick with sand and work it thoroughly into the soil. If this does not give you good radishes, give it more sand another season. A little wood ashes, in addition to your stable manure, or some good commercial fertilizer, will improve their quality. The turnip type is easier grown than the long ones, being less attacked by worms.

Mulching Quince Bushes.—Old Reader, Macon, Ga.: The only advantages resulting from the use of a little salt around quince bushes, are that it tends to keep down the growth of weeds and keeps the soil moist. Even then it must be sparingly used. A good, heavy mulch of coarse stable manure or other litter is of the greatest utility, especially in a hot climate. Dig up the soil about the bushes in the spring as thoroughly as you can without disturbing the roots, and then give each bush a heavy mulch.

SCIENCE IN FARMING.

Silage from Broom Sedge.—In all the Southern States the so-called broom sedge, *Andropogon Virginicus*, is a very common grass. It thrives on dry, sandy soil where other grasses fail, and in the pine woods it yields, while green and tender, a large amount of forage for the grazing stock. H. J. Patterson of the Maryland station reports (*Agri. Science* VII., 493) that many of the good permanent pastures contain a fair sprinkling of this grass, and owe much of their value to it, as it starts to grow early in the spring, when the cattle and sheep eat it with a relish and seem to thrive upon it. The dairy product from this sedge grass is of good quality. When it has fully developed by sending up its tall, hard, rough and wiry stems, horses and cattle universally reject it, and for this reason it is generally regarded as a troublesome weed. Experiments were tried at the Maryland station, to ascertain whether the hard and rough stems of the mature broom sedge could not be utilized and made palatable, so as to be eaten by farm stock. A field of it was mowed in its partially dried state, raked up and hauled in immediately, run through the fodder cutter, and placed in alternate layers with the corn or maize silage in the regular silo. The next winter this broom sedge silage came out in a fine, soft condition, and was eaten with a relish by the stock, none being rejected. Chemical analysis showed that the broom sedge silage contained more of the essential food constituents than did the accompanying corn silage. The results of the test indicate that the Southern farmer may add materially to his store of winter forage, and, at the same time, clear his fields of otherwise useless matter, by ensiling the late growths of the nutritious broom sedge or sedge grass.

The Parts of a Grain of Wheat.—The importance of the wheat harvest adds a timely interest to the description of the structure of the wheat grain by C. E. Bessey, and E. Hyatt of the Nebraska station (B. 32). The outer skin, or pericarp, of the kernel of wheat becomes the coarsest part of the bran. The episperm, or inner double skin, is also a constituent of the coarse bran and cannot readily be separated from it. A third thin and transparent, but hard skin, is the perisperm, which contains no nutritious matter whatever. There is a gluten layer which is formed of cells, closely filled with a very nutritious substance called aleurone, nearly all of which remains in the bran. In graham bread and brown bread much of this is saved to be used as a useful human food, but as the tough skins of the bran are very indigestible, and irritate the alimentary mucous membranes, the farm stock generally get the whole benefit of the nutritious aleurone. The bulk of the wheat grain is composed of a great mass of starch cells, which form the white flour, though even of this a considerable portion adjoining the aleurone or gluten layer is lost in the bran. The germ or embryo which forms the young sprout is composed of cells rich in nutritious substances, but it is usually separated from the white flour and finds its way to the bran and middlings. Considering these facts, it is not at all strange that bran forms so suitable a food for dairy cows, the herbivorous organs of which can withstand the coarse material.

Spraying for Rusts of Grain.—The common wheat rust, *Puccinia rubigo-vera*, passes the winter, in Central Kansas, in the tissues of the winter wheat plant in a mycelial network of threads, according to A. S. Hitchcock and M. A. Carleton of the Kansas station (B. 46). From this a crop of spores is produced and thrown off during the warm spring weather, which germs may rapidly spread the disease under favoring conditions, in both winter and spring grain. The volunteer wheat which grows from the self-seeded field, after reaping, materially aids in the infection of the winter wheat, by carrying the rust through the few months after harvest. The crop may also be infected the succeeding spring by the red rust spores, which are capable of maintaining their power of germination through the winter. A second kind of wheat rust, *Puccinia graminis*, does not seem to survive the Kansas winter, either as a mycelial network, or in the uredo-spore stage, though it may do so in warmer climates. There is little danger of infection from one kind of grain to another, as a series of inoculation experiments shows that both wheat and oats are easily infected by rust from the same kind of grain, but not by the same kind of rust from other grain. Wheat is infected by rust from wheat, but not by rust from oats, American corn, or blue grass. Certain fungicides, as potassium bichromate, and ferric chloride, proved effective in preventing rust, but spraying experiments showed that it was almost impossible to sufficiently cover the foliage. Although the rust of grain can be largely decreased, it is very difficult to attain prevention, as is done in such diseases as the mildew of grapes. Even if the spraying of wheat and oats against rust were effective, it would seldom be profitable. The breeding of varieties of grain which shall be rust resisting, as in the so-called rust-proof kinds, is the most promising remedy against loss by grain rusts.

Amount of Water Needed for Irrigation.—That an excess of irrigation water is often applied to crops, is clearly shown by the experiments through four years of J. W. Sanborn at the Utah station (B. 29). Those plats which were saturated to a depth of eighteen inches, gave a better crop of wheat than where either more or less water was used. The best results with timothy was on soil saturated thirty inches deep. The irrigation water which escaped from the soil by leaching was slightly richer in the elements of fertility than before it entered, but the amount so escaping was so small that the total contained but a small fraction of the solids applied. These solids are nearly all removed by the soil, from irrigation water, even when it is applied beyond soil saturation. Where the water was applied in small quantities, the soil temperature grew higher and higher with decreasing amounts. Water applied to gravelly soils, appeared to evaporate inside of twelve days. The seepage of water from higher lands may be of value to those regions which may adopt irrigation for areas subject to drouths, though having sufficient rain to induce percolation of water, as seen in springs and rivers.

The Ripeness of Corn for Fodder and Grain.—The question as to the best time to cut corn for both stover and grain is of growing importance, as every year an increasing number of farmers thus harvest their crops of maize. Experiments at the Iowa station by C. F. Curtis and G. E. Patrick, prove that the fodder of a crop of dent corn reaches the highest yield and the best condition for feeding at the stage of growth indicated by a well dented kernel, and the first drying of the blades. As the grain itself reaches the highest yield and the most useful condition at the stage of growth indicated by a well ripened ear and half dried blades, it follows that the best time for harvesting the corn crop for the highest utility of both grain and fodder, is when the ears are almost ripe, but many of the blades are still green. After the fodder had reached its best condition for cutting, there was a rapid decline in both yield and feeding value. There was but little change in the composition of the grain in the several later stages of ripening, and there was little if any decline in either yield or feeding value after the best condition was reached, nor did there seem to be much gain except a small increase in yield, after the denting stage of the grain was reached, nor did any material change occur in the composition of the cobs during these later stages of ripening. The loss resulting from the common farm practice of shocking the corn fodder in the field under the usual weather conditions, and husking it there after two months, amounted to about one-half of the dry matter of the stover, and more than half of its total feeding value, though the amount and quality of the grain was little affected.

Feeding Wheat to Hogs.—The prevailing low prices for wheat have led the North Dakota station to test whether farmers could realize more from their wheat by feeding it to swine. E. C. Chilcott reports (B. 38) that hogs averaging about 100 pounds in weight were purchased in September at $4.50 per hundred live weight. They were fed for three months on nothing but unground wheat, water, ashes and salt, with an occasional handful of hay or husked corn fodder. In December they were butchered and sold for $5.50 per hundred dressed weight, returning 57 cents per bushel for wheat consumed, without allowing anything for manure, or labor in caring for hogs. A more rapid and uniform gain was made by the hogs fed on ground wheat, and the resulting pork was of better quality; but these hogs consumed more food than those fed upon whole wheat. Of the ground wheat, 480 pounds were required to produce 100 pounds of gain, but 490 pounds of whole wheat were needed to make the same gain. Ground wheat realized in pork over 58 cents per bushel, while that fed whole brought nearly 56 cents, the difference being over two and one-half cents per bushel, which would scarcely pay for grinding. The better quality of the pork and the greater weight, however, would probably repay a slight extra cost for grinding. The quality of the pork produced from ground wheat was nearly equal to that from corn, and superior to that made from peas or mixed food. Corn brought as pork 60 cents per bushel, and peas over 65 cents. The average daily gain of hogs fed on whole wheat was 1.12 pounds, on ground wheat 1.32, on ground corn 1.40, on peas 1.21, and on mixed foods 1.61 pounds. Hogs that have been allowed free exercise and a mixed diet should not be shut up at once, and confined to one kind of food, but should have a preliminary feeding period, to gradually accustom them to the changed conditions. For short periods, peas gave better returns than either corn or wheat, but did not equal either of the latter as a single food during a long period. As the object in feeding grain to hogs is to realize a profit on each pound of grain consumed, therefore the more grain consumed the greater the profit, provided the ratio of consumption to gain remains the same. Hence it is evident that while ground wheat and corn meal were about equal, pound for pound, whole wheat was inferior to either of them when fed alone for three months.

Cultivating Field Corn.—The experiments with American corn at the Oklahoma station are reported by A. C. Magruder as indicating that shallow, frequent cultivations are best for listed corn, while fewer and deeper cultivations are most suited to drilled corn. In growth the listed field was from three to four days behind the drilled, though there was but one day between the plantings. The listed maize was the best when the dry weather came in July, as the drilled corn thus received a severe check. The listed corn produced the greater yield. The listed corn cultivated shallow five times made the largest yield of fodder, while that cultivated shallow ten times produced the highest yield of grain. The drilled corn yielding the most fodder received three deep cultivations, but the most grain from drilled corn was the result of five deep cultivations. Subsoiling the alkali soil on the station farm, did not benefit either oats or corn. More grain and less fodder was produced from seed grown north of Oklahoma than from more southern grown maize.

Green Manures for Nitrogen.—Green manuring improves the physical properties of the soil by making it more porous and adding to its supply of humus. E. W. Allen of the U. S. Department of Agriculture, states (F. B. 16) that the roots bring up dormant plant food from deep down in the soil and deposit it near the top, where it can be used by plants feeding near the surface. Green manuring with buckwheat, Hungarian grass, and other non-leguminous plants, adds practically nothing to the soil which was not there before, except a mass of vegetable matter which decays and goes to form humus. But green manuring with clover, peas, beans, lupines, or other leguminous crops, actually enriches the soil with nitrogen drawn from the air. These plants can grow with very little soil nitrogen. They store up the nitrogen of the air as they grow, and, when plowed under, give it up to the soil for future crops. This is the cheapest means of manuring the soil with nitrogen. Animals, however, as well as plants, need nitrogen in their food. By feeding the crops of clover, cowpeas and such plants, only about one-fourth of the fertilizing materials of the crop is lost to the soil if the manure is properly cared for. For renovating worn or barren soils, and for maintaining the fertility where the barnyard manure is not properly utilized, green manuring with such leguminous plants as cowpeas, clover and lupines is recommended. A dressing of potash and phosphates will usually be sufficient for such green manuring crops. On the medium and better classes of soil, however, the practice of green manuring is irrational and wasteful. The farmer should mend his system so that the barnyard manure will be as well cared for as any other farm product. Loss from surface washing, leaching, fermentation and decay should be guarded against. The feeding of richer food will then mean richer manure, and better and cheaper crops, at more profit to the farmer.

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FARMING IN FOREIGN LANDS.

The government of South Africa is importing English hackney stallions for breeding purposes.

Vanilla culture is increasing on the island of Reunion, in the Indian Ocean, the export of product being nearly one hundred tons yearly.

The despised rabbit of Australia is being anxiously inquired for by the British army contractor, who sees a possible supply of cheap and wholesome food for the army in that direction.

The grape and wine industry in Hungary is suffering greatly from phylloxera and black rot. The vintage has steadily decreased, year by year, that of last year being only three-eighths of the annual average of fifteen years ago.

The experiments of flax-growing for seed and fiber in South Australia has proved eminently satisfactory, far exceeding expectations. It is expected that a much larger area will be devoted to flax culture, and possibly other fiber plants.

The director of the government farm at Nariad, India, reports officially that cotton from American seed has proved a failure in India, after long and repeated trials. He recommends, therefore, that the cultivation should stop, and indigenous varieties be cultivated instead.

A school of practical agriculture has been established in the Province of Buenos Ayres, under direction of the Argentine government. This is the first institution of the kind in that country, and great hopes are entertained of its elevating influence on agriculture in Argentina.

Dried peat or turf, cut from bogs, is largely used for fuel throughout Europe. Some of it is molded much as bricks are, and it is also pressed into compact balls. One hundred pounds of peat have a heating capacity equal to fifty pounds of hard coal, or to nearly one hundred weight of wood or soft coal.

Tea culture in British India and Ceylon has proved quite successful from a cultural point of view, but its commercial success depends upon increased markets for the product. America and Australia are regarded with interest by Indian and Ceylon planters as possible buyers of their surplus.

An Agricultural Organization Society has been formed in Ireland, largely through the efforts of Hon. W. L. Plunket, son of the Archbishop of Dublin. The avowed aims and purposes of the society are somewhat similar to the Grange of the American farmers, and is full of promise for the agriculture of Ireland.

At a meeting of the local branch of the South Australian Bureau of Agriculture, a member stated that he had raised and sold fifty pigs at a cost of less than sixpence each for feed. He had kept them in an inclosure where they fed off an early crop of barley, and were then fattened on melons, the latter being a profitable food for the purpose.

Sisal hemp is being so successfully cultivated in Jamaica, that next year a considerable quantity of the fiber will be exported. The plant can be grown on barren lands and impoverished soils, which are worthless for other crops. The climate of the island is very favorable to its growth and it is destined to become a great boon to the planters.

The average yearly wine production of the world is about eighty billion gallons, of which Italy, Spain and France furnish about one-tenth each, or together, about one-third of the world's product. In Italy, where farm labor is one-third of the price it is in the United States, the soil for a vineyard is turned up to a great depth, which is one reason why Italy is the finest wine-growing country in the world.

A new machine for flax dressing has been brought out in Melbourne, Australia. It is very simple in construction, consisting of seven pairs of heavy fluted rollers, revolving by steam power, between which the flax is made to pass. The woody parts are thus crushed, and the flax is passed to the scutcher, which removes the broken refuse, leaving the clean fiber ready for use. The new invention is expected to give an additional stimulus to flax culture in Australia.

Lord Rosebery, the premier of Great Britain, maintains two dairy herds on his home farm at Mentmore. One of the herds consists largely of Kerry cows, whose milk is reserved for home consumption. The other herd, of half-breed Shorthorn cows, is kept to supply milk to Lord Rosebery's depot in London. A constant supply of pure water, from a well 200 feet deep, is kept flowing in the cow sheds, and the milk is despatched in sealed cans to London, where it is delivered to customers twice a day.

Much interest is manifested by English farmers in the beet-root sugar industry. They argue that nearly seventy million dollars are sent out of the country for the purchase of sugar, mostly in France and Germany, while they are raising grain at an absolute loss, and large numbers of laborers are out of employment. They think that with proper government encouragement they could cultivate enough beets to supply the country with sugar, while diversifying their industries and retaining the laborers on the soil.

The *Indian Planters' Gazette* urges the pushing of Indian teas in America, as a matter of great importance to the tea planters of India. It says: "As the introduction of Indian tea into the United States on a firm increasing basis should be a co-operative enterprise, the tea gardens of India should tax themselves, as we proposed some time back, so much per acre for a guarantee fund for shipping Indian teas to America, covering any loss of sale, and pushing it by the best approved methods."

Algeria is sending large quantities of barley to France for the purpose of horse feeding. In the south of France it is given whole, like oats, but in the middle region it is crushed, while in the north of France, where farming is more intensive, the barley is cooked. It is given mainly to heavy draft horses, being wholly withheld from omnibus and carriage horses. It enters largely into the commercial feeding stuffs, but on the large farms, where the farmer has his own mill and engine, he grinds it himself.

Vermont merino sheep imported to Australia are proving very successful. The *Pastoralist's Review* states that the Coonong flock of improved Vermont merinos, exhibited at the Wagga show, secured twelve first, two second, and two third prizes out of a possible sixteen first prizes, besides two champion prizes, and the national prize for the best three combing ewes, and closely pressing the grand champion ewe of the yard, which, it is worthy of mention, was bred on the same lines as the Coonong flock, being also a Vermont merino.

The death is announced of Edward P. Pasons Fowler at Southampton, England. Perhaps no man's name is more familiar to American Jersey cattle breeders than that of Mr. Fowler. His father began importing Channel Island cattle to England in 1811, and the son took up the business while yet a youth. He resided for twenty-eight years on the island of Jersey, but his later years were spent in Southampton. He made many passages with Jersey cattle to the United States. His career is an important chapter in the history of Jersey cattle.

The introduction of predaceous animals, to hold certain pests in check, has not proved an unqualified success in New Zealand. A local paper of that colony states that the weasels, which were imported to keep down rabbits and rats, are increasing so rapidly as to become a serious menace to poultry keepers. Their success in keeping down the rabbit pest is problematical, and so far are they from destroying rats, it appears that they fraternize with them, one farmer having found a rat living on merry terms in the same nest with four weasels.

The cultivated area of Egypt is slowly increasing by means of various enterprises for leading the waters of the Nile into regions which have relapsed into deserts. A depression, which is claimed to be the bed of the ancient lake Mœris, has been surveyed, and the question of making it once more a storage reservoir is a financial one. Another scheme is the drainage of Aboukir lake, and the reclamation of the once fertile lands it covers. The area embraces 32,000 acres, which has been acquired by an English company, with the view of founding there an agricultural colony.

The recent sale of Shorthorns at Alnwick Park, the seat of the Duke of Northumberland, was a notable event. Eighty-one animals were sold, of which sixty belonged to the Duke of Northumberland, and the remaining twenty-one to Sir Jacob Wilson. The highest price realized was 265 guineas for the yearling bull, Beau Brummel. The average price of all the twenty-seven bulls was $247, and that of the fifty-four cows and heifers was $200. The Alnwick herd of Shorthorns has been over twenty years in building up, and has become famous by the success of its representatives in the leading shows of the country.

Sugar beets are no longer taxed in Germany, but there is a heavy internal revenue tax on the sugar made. There is a rebate of a part of this excise tax on all sugar exported, which rebate, however, is to be abolished in 1897. There has been an increase, however, in the beets grown and the sugar made, and in the exports. The factories have increased their capacity, in order to produce sugar cheaper, and thus an overproduction of sugar is imminent, which, from the world's increasing competition, may result in disaster, especially to the smaller factories, and those located in unfavorable regions.

In Bengal, sugar is made from both the date-palm and the sugar cane. The cultivation of the date tree and the manufacture of date sugar are extensively carried on in certain Provinces which possess the necessary moist alluvial soil. One acre of land will hold 450 date palms. The trees arrive at maturity in five to seven years, and continue to yield the saccharine juice for twenty or thirty years. Sugar cane is cultivated throughout Madras, the total area being not less than 1,150,000 acres. The cane is grown on high lands above the level of inundations, but which can be irrigated. Iron mills have come into use for extracting the juice, in place of wooden ones.

How to check the locust pest is a serious question in South Africa. One of the latest methods proposed is to gather the puparia of a parasitic fly (*Cynomia pictifacies*) and transmit them in damp moss to farmers in the infested neighborhoods. The female fly is viviparous and deposits her larvæ on the neck of the locust, where it penetrates the tissues and causes death. The grub, now mature, then leaves the empty shell of the dead locust and burrows in the ground, where it pupates, and, in a few days, emerges a perfect fly. Another method is to spray the advancing hosts of young locusts with liquid insecticides by means of any good spraying pump.

It is claimed that one of the great grain-growing regions of the near future is the great Kikuyu plateau of British East Africa. It is from 5,000 to 7,000 feet above sea level, and is one of the regions referred to by Captain Lugard as a probable field for European occupation, though it is within the tropics. Samples of both wheat and barley grown on the plateau have reached London, where they were declared to be of the highest quality. Of course there can be no development of this region until means of transportation are provided, but the proposed railway from Lake Nyassa to Mombas is to pass directly through it.

Grasse and Cannes, France, are the centers of a very active industry in the manufacture of perfumery near the Mediterranean sea. In the vicinity of the former city the annual output of orange blossoms is nearly four million pounds, of roses three-fourths as much; white jasmine, tuberose and other fragrant flowers are largely cultivated. It is found that the most favorable conditions to the success of flower growing for perfumes are an altitude of 500 to 2,000 feet above sea level, a soil rich in calcareous elements, and a situation well sheltered from cold winds, and not subject to the severe frosts which in autumn and spring affect the lowlands. Flowers grown in localities of the elevation mentioned are said to be far more rich in perfume than similar varieties cultivated in valleys or damp lowlands.

The farmers of the Baltic Provinces of the German Empire can ship their grain cheaper by water to foreign countries, than by railroad to the distant large German cities. As Germany does not raise enough grain for her own use, special railroad freight rates were made to these farmers to induce them to ship the grain to their fellow citizens, but these low rates have recently been abolished. A law providing for a rebate on the export of imported grain has been so amended that now the exporter receives a certificate entitling him to import, duty free, a similar quantity of grain without requiring that the exported grain shall first have been imported. In the grain-growing districts the export certificates can be used to pay duties on other merchandise, thus giving the farming communities the benefits of free trade. It is believed that imports of grain into Germany will be so stimulated, that even the American farmer will be benefited by the increase of gain sales.

The "Seventeen-Year Locust."

The fact that the periodical cicada, or so-called "seventeen-year locust," is appearing, in two great broods, the present season, is stated by a number of newspapers to have been announced by the United States Department of Agriculture, and these statements have caused some unnecessary alarm among those who do not understand the exact nature of the insect, or who confound it with true locusts, or so-called "grasshoppers," owing to the somewhat careless newspaper wording. The Department has made no such public announcement the present year, although the cicada chronology published by Professor Riley, in Bulletin No. 8 of the Division of Entomology in 1886, predicted an extended appearance of the insects in 1894. The entomologist of the Department states that the damage done by these insects is, as a rule, quite immaterial, consisting in the slight cutting, breaking, and deadening of the terminal twigs of fruit and shade trees by the females, in the act of laying their eggs. The injury becomes serious only when the insects are exceptionally abundant, and lay eggs in young nursery stock.

According to Professor Riley's chronology given in his first report on the Insects of Missouri (1868), two broods are due in 1894, and the insects did make their appearance during the last week in May. Brood XII is composed of the 17-year form (*septendecim*), and its last appearance was in 1877. It then occurred in the immediate vicinity of New York, Brooklyn, and Jersey City, and on both sides of the Hudson river as far north as Troy, in portions of Connecticut, New Jersey, Pennsylvania, Virginia, and the District of Columbia. Seventeen years previous to 1877, the insect was recorded in North Carolina, in Dearborn county, Indiana, and in Kalamazoo county, Michigan. The last three localities, however, were not substantiated by reports received in 1877. In all the localities above mentioned cicadas were to be expected during June of the present year. Brood XIII is of the 13-year race (*tredecim*), and as with other 13-year broods, its range is in the more Southern States rather than in the northern part of the country. Its last appearance was in 1881, when it occurred in Southern Illinois, throughout Missouri, with the exception of the northwestern corner, in Louisiana, Arkansas, Indian Territory, Kentucky, Tennessee, Mississippi, Alabama, Georgia, and North and South Carolina.

The larvæ, which live underground, and feed to some extent upon the roots of plants, gradually rise to the surface of the ground when nearing full growth, and make their appearance above ground in the nymph or pupa condition. They crawl up the trunks of trees, cast their skins, and the winged insect comes forth. The adults are prevalent for five or six weeks, and, as above stated, do some little damage to trees and shrubbery by puncturing them for the purpose of egg laying. The eggs hatch in about two weeks, and the young larvæ drop to the ground, which they enter to begin their long subterranean life. The entomologist of the United States Department of Agriculture at Washington, D. C., will be glad to receive, during the present season, any accurate locality notes of the appearance of these insects, as he has been for many years engaged in mapping the exact distribution of each brood as it appears.

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Swollen Udder of Cow.—Charles Compton, Bergen Co., N. J., has a fresh milch cow that has had a swollen udder every time she calved. The application of hot water in which a tablespoonful of baking soda is dissolved, in which the udder is either frequently bathed or fomented, will give relief. Give a pound of Epsom salts and an ounce of ground ginger in two quarts of warm water. The milking should be done three times a day, and the very last drop stripped out.

Lampas.—L. D. Upton, Scotland Co., Mo., has a fine colt that has lampas. This is an inflammation of the ridges or bars of the roof of the mouth. If fed with moistened ground feed in which ground linseed meal is mixed, the inflammation will subside in a few days. But if the case seems severe, slightly scarifying the bars with a sharp knife, with the above treatment, will give prompt relief.

Psoriasis—Mollenders and Sollenders.—Jonas Cronkite, Tippecanoe Co., Ind., wishes to know what kind of a disease mollenders and sollenders is, and if they are one and the same, as an English jockey told him his horse had this disease. It is a skin disease called psoriasis. It is a chronic affection, an inflammation of the skin, throwing off scales, and causing the hair of the part affected to look rough and unseemly. It is a tedious, intractable affection. Its choice location is about the hock joint. When it appears on the back of the hock it is called mollenders, when on the inside it is termed sollenders. It resembles an eczematous eruption at first, soon becoming dry and scaly, from the drying of the discharge. Some authors believe it to be hereditary. It probably results from neglect of simple eczema, or may be made worse by unduly severe blistering. The treatment demands the removal of all active inflammation by poultices and fomentations of hot carbolized soapsuds, followed by a mixture of iodine one dram, one scruple of glacial carbolic acid and six ounces of glycerin, applied at night after thorough cleansing. Internally, give a teaspoonful of Fowler's solution of arsenic once daily in the feed. Also give a tablespoonful of Glauber salts in the bran mash at night. Nothing but untiring perseverance will be rewarded by a cure in this obstinate affection. Though it may not be contagious, yet cleanliness demands respectful observance.

Fever in Cows.—C. S. Kneeland, Fulton Co., Ill., has a pet Jersey heifer that has had a dry nose and also hot roots of the horns. The case is one of fever from cold or from over-feeding. Give half a pound of Epsom salts with a dram of sulphur in the drinking water or slop. If this does not relieve, watch for cough, enlarged glands about the throat or loss of flesh. In such event call a veterinarian.

Chronic Cough of Colt.—S. E. V., Wells Co., Ind., has a colt that has a chronic cough. The cough is tight and dry. There is no running from the nose. These chronic coughs are often troublesome affections, as they may have their seat either in the larynx, in the air passages, or in the lungs. Heavy coughs often depend upon indigestion, from dusty or moldy hay or grain, or from too violent driving after a full feed, and watering. It may also result from an irritable condition of the air passages after bronchitis, pneumonia, or influenza, or may be dependent upon the presence of these affections. In chronic cough, external irritation will often prove useful. Thus take Croton oil 15 drops, glycerin one ounce. Mix in a bottle by shaking and apply with a woolen swab, being careful not to get any of the mixture into the eyes or nose from smeared fingers, or spattering, during the application. Put a handful of whole flaxseed in the bran mash every night. Moisten the hay after shaking the dust out well, and also moisten the food which should always contain bran and a handful of oil meal. Make a soft paste of tar and linseed meal, and two or three or more times a day apply it on the tongue with a smooth wooden knife. Powdered camphor half an ounce, half an ounce of finely powdered saltpeter mixed with half a pint of tar, made into a thin paste by mixing in ground linseed meal, and applying on the tongue as above directed, will prove of essential service. Keep the bowels moving by mixing linseed oil in four-ounce quantities every few days, or daily till the bowels are free and the dung soft. Also the skin should be kept clean by daily grooming. Powdered squills, muriate of ammonia, each an ounce, molasses a pint, thickened with linseed meal as above, and frequently applied on the back part of the tongue as above directed, will allay the cough. Half an ounce of saltpeter dissolved in a pail of drinking water may be given during the day, or the hay may be wet with the solution. In distressing cases a tablespoonful of laudanum may be added to the molasses mixture.

Partial Paralysis.—Cornelius Conlin, Gilliam Co., Oregon, has a valuable brood sow that has been weak in the back since farrowing her last brood of pigs. She walks as though there was a hinge in the backbone allowing the hind parts to sway from side to side. The case is not a promising one. Small doses of from two to three ounces of Epsom salts given in the milk, with a tablespoonful of clean wood ashes and the same amount of table salt, should be given once or twice a week to regulate the stomach and bowels. Sweet milk, mixed with ground oats scalded in boiling water, will prove the best diet. Fresh grass, chives, onion tops and lettuce will keep the blood cool. Give ten grains of nux vomica in milk night and morning. If spasms of the legs occur, stop giving the nux vomica.

Tuberculin—Test for Tuberculosis.—Everett Atkins, Hillsborough, N. H., has seen reference to the tuberculin test for consumption in cows and wishes to know of its reliability. Professor George Law, Dr. Cooper Curtice, and many other veterinarians, have shown that the tuberculin test is so reliable that 99 per cent. of animals, which were thus indicated as tuberculous by the test, proved to have been consumptive by post-mortem examination. It is now so generally conceded to be reliable, that the great breeders advertise that the test will be made as a proof of the health of their herds when placed on sale.

Blotches or Sores on Cows.—Philo Philips, Emmons Co., Dak., has a fine young Jersey heifer in flush milking that has little lumps all over her, causing the cow to rub against everything she can get near. These soon suppurate and make sores. Give small doses of Epsom salts—three to four ounces a day, with a dessert-spoonful of common salt. For application to the sores, a solution of ferric alum, a dram to the ounce of water, applied with a small swab daily, will dry up the sores. But the trouble comes from the stomach and too high feeding. Give a handful of ground flaxseed in the slop at night, but no corn meal or cotton-seed meal. Good wheat bran or middlings will be best. Put the cow in pasture, or feed cut grass.

Consumption—Tuberculosis in a Horse.—Irénéus Corson, Bracken Co., Ky., wishes to know what disease destroyed his two-year-old stallion. The first sign of trouble with him was dullness for two or three days. He nibbled gingerly at hay, would take a few oats in his mouth and then let them drop out again. This led to an examination of the mouth and throat. Lumps were felt about the throat, the nose ran a little, and the eyes looked red and watery. The breath was offensive when he coughed. He was treated for the colt distemper, but a large lump in the throat, which was hot, showed no signs of breaking, though poulticed. He coughed a good deal as if colt distemper were the trouble. No tumor broke to give relief in swallowing and eating, but the colt drank water and would eat a little. All the signs of sickness increased, the cough, rough coat, weakness and fever kept up. Everybody who saw him said it was colt distemper. A veterinarian was sent for when the colt had been ailing for five or six weeks, who, after a long examination, pronounced the case tuberculosis and advised killing him. He was given milk, oatmeal gruel, steeped hay and oats, as the doctor directed, and he was allowed to run in and out of the box stall and paddock for two weeks, but he seemed to suffer so from coughing, and the running from the nose and eyes, and the lumps in the throat discharged a little matter, that, out of pity, he was shot. The veterinarian was correct in his diagnosis of tuberculosis.

Milker's Cramp.—Oscar Cobb, Cook Co., Ill., milks fourteen to sixteen cows, morning and evening, and now he finds his hands failing to grasp the teat every time. He makes the attempt, and his hands ache for a long time after milking. He can scarcely hold the nails in shingling, and even the right hand holding the hammer cramps. In holding the plow handles, both hands sometimes cling to the handles when he wants to let go, or they hang on to the lines. The case is one of milker's cramp. It is of the nature of writer's cramp, or any cramp from long and rapid contraction of the muscles of the hands or feet. It often occurs in wine presses where persons tread out the juice with the feet. The first step toward securing relief will be rest, long rest, even to giving up the milking for a long time, if not entirely, as paralysis may follow persistent use of the hands for milking. Rubbing one hand with the other, smart bathing of the hands and arms with salt and water, vinegar and water, or bathing in buttermilk; all these should be done with vigor and persevered in for a long time, several times a day. If you are nervous, or run down in health, it will be wise to consult a physician.

Happiness for Animals.—H. D. Scrub, Adams Co., Ohio: Worry and torment make people thin and lean, and liable to take on diseases. Animals are put in similar conditions of body by the teasing torment of flies, fleas, or lice. These produce wear and tear of the animal system. In fly time, horses become thin, cows slacken in milk not withstanding the food is plentiful and of a generous quality. The useless waste of power never can be made remunerative. To feed one day, and starve the next makes the meat all lean, dry and poor. Starved young animals are always poor, unthrifty and unproductive. A draft from a bank cannot be made without a previous deposit. It costs too much to pervert natural laws.

Remedy for Scours in Calves.—J. W. Enn, Cheshire Co., N. H., writes us that he saw in a former number of the AMERICAN AGRICULTURIST, a good remedy for scours in calves. It consisted of pounded corncobs, a handful to a quart of water, boiled half an hour, and the liquid then added to the milk fed in the morning and at night. He gave it to his sick calves and found it an excellent remedy for scours.

Epilepsy in Two Heifers.—W. K. Shoemaker, Wells Co., Ind., lost two young heifers in one week. He saw one heifer running around in a circle, bellowing and frothing at the mouth as if she had a fit. He ran to where she was and in ten minutes the calf fell and died. A few days later he noticed the other heifer a little ways from the rest of the herd shivering, and after a time she had spasms, which followed one another every ten minutes for an hour or more, when she, too, began to run around in a circle, frothing at the mouth and finally fell and died. Cattle are liable to rush of blood to the brain from their short necks and fullness of blood. You state that your cattle are in high condition, and this is the state in which such cases occur, but it is strange that two cases should have occurred in a week. The heifers had not been surfeited, or fed extra food not given to the other stock. Poison or any contagious disease could not have occasioned the symptoms. Your stock should have salt as freely as they will voluntarily take it. In such cases, pour cold water upon the head persistently, right where the animals happen to be, for removing them would intensify the cases. Give half a pound of Epsom salts and half a pound of common salt dissolved in a quart of warm water, to which is mixed a teaspoonful of ginger, and injections of a handful of salt and Epsom salts in a half pail of quite warm water, repeated till the bowels are loose and the passages are frequent. The pasture should be changed, and should have shade and plenty of water.

TOPICS OF THE TIMES.

The Crisis in Farming.—That the mischief which the low prices of farm products presage can be averted, is the statement of the United States Secretary of Agriculture, J. Sterling Morton, in his recent article in the *Forum*. He believes that the fall in the prices of farm products may be attributed largely to the surprising increase of the home supply of those products as compared with the home demand for them. All the world is using American agricultural machinery, and is planting, cultivating and harvesting with more skill, and, therefore, with less loss and larger results in gardening products, than ever before since the earth was first prodded with a plow. In Central Africa, with its most fertile soil and delightful climate, in Australia, in South America and in Central Asia, the public land is being bestowed upon actual settlers as the same free homestead that has blessed the North American pioneer farmer. But there is no other country which can make a general showing of increased productions in cereals, meats, root crops, and everything else, equal to the United States.

The agriculture of the United States Republic, he says, has given a solid basis to all its normal manufacturing interests. It has purveyed for every industrious and frugal artisan in the land an abundance of low priced food of the very best quality. The farmer has nourished, maintained and sustained the trade of the United States with Europe and all parts of the civilized globe where Americans make exchanges at all. Farm products represent more than seventy per cent. in value of all exports of the United States. Selling in competition with all the world, a very serious drawback to the American farmer, is his compulsory purchasing in the home market, whence all the competitors of the outside world are excluded. There are twenty-one persons outside of the United States to trade with, where there is one with whom to swap inside its boundaries. This hunting all over the globe for a market as a seller, while incarcerated as a buyer in the home market, gives the farmer that tired feeling which generates discontent.

The managers of great industries which are carried on by machinery, steam, electric and water power, can ring a bell and cause every wheel to stand still, and every muscle to go into idleness, whenever the market promises to be glutted. Then their employees become a burden upon the farmer and other industrious citizens. But the farmers of the country, he says, with wheat at about a half a dollar per bushel, looking out upon fertile fields which promise an abundant harvest for 1894,—a harvest which shall add possibly tenfold to the surplus grain now on hand, and probably permanently reduce prices to a still lower level,—can ring no bell to stop growing crops, nor by any possible means halt or shrink normal farm production. An overruling Providence arranges the amount of food for his children each year. Other industries may form trusts, but Mr. Morton believes that God in His wisdom has precluded forever the possibility of soil-tillers forming a trust, and thereby limiting the bounties of the Creator. The partners and the uncontrollable power agents of the farmers are sunshine and rain, and, consequently, he thinks, the output of the plows cannot be limited.

The real, genuine farmer in the United States, the man who is at home on his own land, and is content to make for himself and family a substantial and wholesome living, and to properly educate his children and conserve his landed interests, with, perhaps, making an occasional addition of acres thereto, this farmer is not complaining of his lot in life. Census returns show that about seventy per cent. of all the farms in the United States are unincumbered. There are no mortgages or other liens upon them. What other calling, what other industry, what other investments for making a livelihood, and for producing more capital, can make as good a showing as the farmers? The American farmers are better off to-day than the workers in any other vocation. In their homes they illustrate the fact that, while they have been protectively unencouraged, and uninspired by the law-making power to renewed efforts, or increased productions, except in the case of the Homestead law, they are nevertheless better off than those citizens who have depended for a livelihood upon employment in those indus-

(*Continued on Page* 456.)

Locomotor Ataxia.

The Wonderful Case of a Clifton Springs Resident.

SUFFERING FROM THE HORRORS OF LOCOMOTOR ATAXIA—RELIEVED IN A REMARKABLE MANNER.

(*From the Rochester, N. Y., Union.*)

One of the most dreaded diseases known to medical science, and one that baffles the skill of physicians and the power of medicine alike, is Locomotor Ataxia. This disease is a peculiar form of creeping paralysis, and was practically unknown until a few years ago. To-day many cases are heard of on every hand and it is conceded by all physicians to be a rapidly growing evil. This disease is generally characterized by the most violent shooting pains, absence of knee jerk and of power in the limbs, while the optic nerves are frequently affected and the eyesight lost. Yet the symptoms are rarely just alike in any two cases. The most eminent physicians of the day have turned their attention to the disease and looked in vain for a remedy that would give even relief. Machines have been made for stretching the spine, galvanic and massage treatment tried, and the most powerful medicines compounded without effect. Morphine is usually given in quantities, but after its deadening effects wear away, it seems that the disease has been aggravated rather than relieved.

A reporter of the *Union and Advertiser*, while at that beautiful resort, Clifton Springs, a few days ago, was startled by hearing some people talking about a severe case of locomotor ataxia that had been cured. Scenting an interesting and valuable story, he investigated, and found that the man in question was one Mr. H. Van Wormer, a resident of Clifton Springs. The reporter determined to thoroughly sift the matter, and after a little inquiry found Mr. Van Wormer himself.

He received the reporter pleasantly and said that he would willingly give his experience to the world, and undergo the annoyance of publicity if thereby some other unfortunate might secure relief.

Speaking of his case, Mr. Van Wormer said: "I first noticed this thing about ten years ago, when, after a run of fever, I took a severe cold, which seemed to settle in my spine. It came on very gradually at first, and didn't bother me much. I first felt a numbness in my feet, and this slowly crawled up my legs until it reached my thighs, and I was obliged to go on crutches. I consulted various physicians, and even went to Buffalo for a course of treatment. This was about six months after the disease commenced. I received no benefit, and for years tried to help myself by daily exercise, which benefited me more than medicine. For six years I was unable to do a stroke of work.

"One day last winter I saw a notice in the *Ladies' Home Journal* of the case of a man in Hamilton, Ontario, whose condition was like mine. He ascribed his returning health to the use of a medicine called Dr. Williams' Pink Pills for Pale People. I was so much impressed that I sent for some. From the first dose they seemed to help me. I felt a change. The numbness was relieved. Since then I have taken them steadily, and I have gained steadily. Yes, Dr. Williams' Pink Pills are a wonderful medicine. At least they have done a great deal for me. If what you write should catch the eye of any one suffering as I have suffered, I would be glad to have him address me, and I will gladly give him my experience in detail."

Mr. Van Wormer lives at the house of Mrs. Mary E. Vanderhoof. As the reporter was leaving the house he asked her about the case. She said: "Oh, Mr. Van Wormer is very much better, and we are all so glad. He tried everything without avail until he took those Pink Pills."

The discoverer of Dr. Williams' Pink Pills for Pale People certainly deserves the highest tribute that pen can frame. His medicine has done more to alleviate the sufferings of humanity than any medicine known to science, and his name should be handed down to future generations as the greatest savant of the present age.

Dr. Williams' Pink Pills contain, in a condensed form, all the elements necessary to give new life and richness to the blood and restore shattered nerves. They are an unfailing specific for such diseases as locomotor ataxia, partial paralysis, St. Vitus' dance, sciatica, neuralgia, rheumatism, nervous headache, the after effects of la grippe, palpitation of the heart, pale and sallow complexions, and all forms of weakness either in male or female. Pink Pills are sold by all dealers, or will be sent post paid on receipt of price, (50 cents a box or 6 boxes for $2.50—they are never sold in bulk or by the 100) by addressing Dr. Williams' Medicine Co., Schenectady, N. Y., or Brockville, Ontario.

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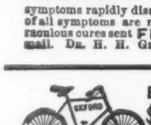
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TOPICS OF THE TIMES.

(*Continued from Page* 455.)

tries which are directly dependent upon and stimulated and sustained by legislation.

Fifty Years of English Farming.—The thrifty English farmer of fifty years ago has recently been described by R. D. Blackmore as a happy farmer, able still to find a shilling in his Sunday clothes, and to think of the guineas in a nest beneath his thatched roof. For wheat was golden then in England, and the good ox owned his silver hide. The fair outlook over hill and valley, rustling field and quiet meadow, was not yet a forlorn view, a sight that is cut short in sighs, a prospect narrowing into a lane that plods down hill to the workhouse. Of all the tasks of the world, the one that can never be long in arrears is eating; and of all British victuals, next to bread, the potato claims the foremost place. Where the soil was light in those days, potatoes could be dug by the ton, but in these epidemic times it is hard to find a good potato. Then it was no mockery to cast the fat grain among the clods, or trickle it into the glistening drill, to clear the sleek blade from the noisome weed, to watch the soft waves of silky tassels dimple and darken to the breeze of June, and then the lush heads with their own weight bowing to the stillness of the August sun, thrilling the eyes with innumerable throng, glowing with impenetrable depth of gold. He grieves that this beauty should be of the past, and ground into gritty foreign flour. But fifty years ago, these good sons of Great Britain had no dream of the commerce which should sell their homes and landscapes to the sneering foreigner. Their trouble, though heavy, was not of their own making, but inflicted from without. Therefore it could be met and cured by men of strong purpose and generous act, but to-day the competition of foreign farmers is a crushing force.

Helping the Long Island Farmers.—The legislature of the State of New York appropriated $8,000 at its last session for experimental work on Long Island, and a meeting for conference was held in New York city, July 10th. There were present Dr. Peter Collier and Prof. Beach of the Geneva Station, James Wood, Ex-President of the New York State Agricultural Society, W. D. Barns of the Experiment Station Board of Control, and Messrs. Allen, O'Donnell, Scudder, Hendrickson and Selover of Long Island, and E. G. Fowler of Orange county. After a full discussion, it was considered desirable that the first work be done in endeavoring to find some relief from the insect and fungous pests which are working havoc on the island.

Progress in Dairy Methods.—It is now the boast of the dairyman that science has taught us much by patient study and many careful experiments and tests. It is now known to an ounce how much food a cow needs each day; what the best foods are; how the milk is produced; its composition; how the cream and the cheese are most easily separated from the rest of the milk; and how the milk is affected by temperature, by feeding, and by bacteria. Fifty years ago the smooth stone floor of the cow stable was swept clean before milking, the rows of clean crocks or shining pans in the milk room were carefully skimmed by hand, and as soon as the cream was ripe it was industriously agitated in the old dash churn until the butter came. Many ingenious forms of apparatus for the more easy manipulation of the milk, the cream, the butter and the cheese, are now in daily operation in every neighborhood. The Babcock tester determines the amount of fat in the milk, and the Farrington alkali tablets measure the sourness of the cream. The butter is now flavored by special bacteria, just as bread is raised by special yeast. In many private dairies, a centrifugal separator is used to take the cream from the whole milk, or by various systems of setting, the cream is allowed to rise to the surface by gravity. The cream is either churned at home or sold to a creamery, which sends a wagon daily to collect it. In most cases this is now superseded by the sending of the fresh whole milk to the creamery, where the cream is removed by a centrifuge or separator, and the skim or "separated" milk returned to the farmer in a sweet condition. There are machines which directly separate the butter from the whole milk. In other cases the milk is sold to a cheese factory equipped with the best contrivances for making cheese. Near large cities large quantities of milk are sent daily from the farm to the railway station in cans so full that the milk does not shake, and special milk trains whirl the liquid food to the city dweller.

World's Horticultural Fair at St. Petersburg.—The Russian government proposes to hold an International Exposition of fruit and fruit culture at St. Petersburg, from September 22d to November 12th, 1894. A congress of pomologists will convene at the same time and place. American citizens participating as members or exhibitors will have their goods admitted free of customhouse duties with the condition of their reshipment. Goods which remain in Russia for two months after the close of the exposition must pay duty. Plants, fruits and vegetables, except American potatoes and grapes, will be admitted without detention at frontier customhouses, upon certificate by the officers of the customhouse at St. Petersburg, and into the exposition building, under the condition that they shall be on exhibition by the 20th of September, and shall remain at the exposition till it closes. Such exhibits are entitled to a reduction of one-half of the usual tariff rates on the lines of the Russian railways both ways, to St. Petersburg and return. Any other goods sent to the exposition will be allowed to pass without any charge over the Russian lines, if addressed to the points whence originally shipped. Members attending the congress and exposition will also be entitled to free transportation on their return trip from St. Petersburg. Applicants should address: International Exhibition of Fruit Culture, 1894, at St. Petersburg, Russia, Imperial Agricultural Museum, Fontauka, 10. Horticulturists, nurserymen, pomologists, and all interested in fruits, are cordially invited.

A Large Potato Farm.—On an old Southern plantation, in Central Tennessee, formerly owned by the ancestors of President Polk, there is an immense potato farm, comprising 700 acres of planted land, which yields annually 125,000 bushels of tubers. S. S. Clawson and M. Stevens, the owners, are two enterprising young farmers who went there from Indiana, about ten years ago, for the express purpose of raising potatoes for the wholesale markets. When they bought the 2,000 acres of land in the plantation, it was badly run down, being covered with brush and briars. Though laughed at by the native whites, the young Hoosiers cleared the land and planted it as fast as possible, until now one hundred negroes and eighty-five mules are needed to run the farm. Two crops are planted each year, the early crop giving the larger yield. Their potatoes are growing unusually fine this summer, in the light soil, which is so rich that the potatoes are raised without the use of any fertilizer. A cooperage factory on the plantation makes the 50,000 barrels used each year for shipping the product, and there are other features of economical and effective management.

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STEEL RAILS FOR BOTH WAGONS AND ELECTRIC CARS CHEAPER AND BETTER THAN STONE ROADS —THE OHIO IDEA.

Martin Dodge [*Concluded*].

It is generally supposed that the cost of building electric roads is greatly in excess of the cost of building macadamized roads. This is all a fiction, and proceeds mainly from the fact that to the cost of building the electric road they add the cost of equipping with cars, power and operating force. Take the cost of building a macadam road, and add to that the cost of the horses, wagons, carriages, and drivers required to operate it, and you will find that the macadam road is the more costly. Comparing the two, as shown in the cost of transportation per ton per mile, we find that with horses and wagons the cost per ton per mile is twenty-five cents, while with the electric car it is only five cents per ton per mile. The cost of the steel roadbed is no more than the cost of the stone roadbed, but when it is once laid it contributes much more to cheapen transportation.

It is important to observe that with all that has been done to so successfully cheapen transportation there is yet a field practically unreached wherein we have no cheap form of transportation, and that pertains to such distances as are too long to be reached with horse power and too short to be economically reached with steam cars run in solid trains. The Report of the Ohio Road Commission, of which I had the honor to be chairman, was the first official document to call attention to these important facts, and to call a halt in the lavish expenditure of money for building long-distance wagon roads which could, in reality, contribute little or nothing toward cheapening transportation.

We are apt to forget that what was once a cheap form of transportation, such as a good wagon road would furnish, is now—by comparison with the other and better means—a very expensive means of transportation, and the danger is that much money will be misexpended and mainly lost by reason of the fact that so many are still willing to put the "new wine into old bottles."

In Ohio, the Legislature has followed the suggestions made by the Road Commission, and has passed three separate acts authorizing the construction of steel roadbeds suitable for the passage of electric cars and wagons, to be built with the public money and maintained as common turnpikes and bridges are now built and maintained. These laws, which originated with the writer, seek to apply existing and well-established principles to the new form of construction, which is destined to contribute more to cheapen transportation in the future than anything has done in the past, so far as it pertains to distances of five miles and upwards to forty miles.

It is not claimed that these electric roads could be built and maintained wholly out of the profits of the carrier, but that they should rest as a burden upon the benefited land area in the same way that other road improvements now rest.

I have estimated the increased value of agricultural lands resulting from the decreased cost of transportation over steel rails by inanimate power, at thirty dollars per acre. Observation to confirm this, only waits upon experiment.

In conclusion, let me submit the following quotations from the Report of the Ohio Road Commission, which is the pioneer of this new policy:

It being the established policy of the people to aid in cheapening transportation by deepening rivers, harbors and channels, by building roads and bridges, streets and viaducts—all by appropriations of public money and by contributing the use of streets and roads for electric cars—we see no reason why they might not as logically and more profitably contribute to the construction of electric railways to be and remain a part of the common roads, as to the paving of these roads to be operated with horses and wagons, if in any locality the people should desire to do so.

We have already reached the maximum power of horses and other animals for draft, speed and endurance. The only improvement that we could hope to make to lessen the cost of transportation with these animals would be in improving the roadbed. A comparison of the cost will show that the average expenditure required to macadamize a road, or make it hard and durable with any kind of metal, is fully equal to the cost required to lay down steel rails over which not only wagons and carriages propelled by horses, but cars propelled by electric power might also go at a greatly reduced cost in transportation.

Hon. John M. Stahl, in a valuable article in the Illinois number of *Good Roads*, has made a conservative estimate of the wagon freight of this country for the year 1892 as 500,000,000 tons. He also estimates that this will be transported over country highways an average distance of eight miles, which would be equivalent to 4,000,000,000 tons one mile. At a cost of 25 cents per ton a mile, which would be required to move it by horse power with ordinary vehicles, it would amount to the enormous sum of $1,000,000,000. This may be stated as the cost of operating wagon roads. Now, if by substituting steel rails and inanimate power there could be a saving of four-fifths of this amount—which would be much less than the proportion indicated by Gilmore's tables—the cost of moving this tonnage would be only $200,000,000, instead of $1,000,000,000 leaving a gain of $800,000,000. This for a period of ten years would leave a net gain of $8,000,000,000.

We have made great and unexpected improvements in the means of transportation where we have substituted other power for horse power, while we have made but little improvement in the cost of transportation where we have adhered to animals as the motive power. To this fact should be added the other important one that millions and millions of public money have been expended to aid in cheapening transportation with horses, while nothing has been expended to aid the means that have been most successful in cheapening our rates of transportation; but if we should extend the same liberal policy to the electric car that we have extended to horses and wagons by providing a free track for it to go upon, as we have for other vehicles propelled by animals, the rate of transportation would be still further cheapened in the future as it has been in the past, and a lower rate can be so reached than by any other means.

The economical advantages are so greatly in favor of steel rails and electric power that no objection can be sustained against their introduction unless it rests upon the supposed inconveniences of using this new means in the most commodious manner. In all our great cities and most of our smaller ones, double tracks are already laid and are being rapidly extended to the suburbs for considerable distances, from ten to fifteen miles; their use at the present time is entirely confined to the matter of carrying passengers, but after midnight passenger traffic is over, and from that time until five o'clock in the morning these tracks are idle and the streets vacant. During that time they could be used to great advantage and with great economy for transporting freight and food products placed upon trail cars, to various markets and other places of distribution in the centers of population; so that the question of introducing steel rails and electric power is only a question of extension. The nucleus of the system already exists, and its use can undoubtedly be extended with great advantage.

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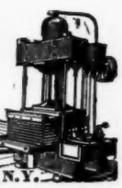

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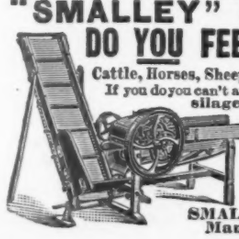

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The Literature of the Money Question.

This question cannot be understood without a knowledge of the nature of money in its various forms, and of the fundamental principles which govern the movements of exchange. All this is not the simple matter that one might suppose from reading much of the comment of the day, whether made by "gold bugs," silverites, or paper money advocates. Even the newspapers on all three sides of the subject have been very uncertain of their ground in many instances. A thorough study of the currency problem on the part of voters is much to be desired, and it is useless to attempt to treat it fully in a few brief articles.

Works which state the underlying principles without leading the reader on to a consideration of partisan views are not numerous. The A B C of money and exchange may be found in W. Stanley Jevons' "Money and the Mechanism of Exchange" ($1.75), a simple, elementary work, clearly written, and a standard authority. He is a single standard advocate, but tries to be non-partisan in this book. Another standard treatise is Gen. Francis A. Walker's "Money" ($2);* he is an international bimetallist.

An executive document of the United States Senate, compiled by S. D. Horton and entitled "A Partial List of Modern Publications on Money," furnishes the information which its name implies, and can be obtained, probably, in limited numbers, on application to senators. This is Senate Executive Document No. 58, 45th Congress, third session. Other public documents full of useful information are the records of the proceedings of the international monetary conferences held in Paris in 1878, 1881 and 1889, and the report of the United States silver commission appointed in 1876, any or all of which should be available through senators or representatives.

Historical works of value, which give the statistics of the United States money, are Prof. W. G. Sumner's (Yale) "History of American Currency," $3*; Prof. C. T. Dunbar's (Harvard) "Currency, Finance and Banking," $2.50.* A work entitled "Currency, or the Fundamental Principles of Monetary Science," by H. B. Willson, is instructive, and advocates an international currency on a gold standard. Statistics of money in circulation in the United States, and a compilation of our monetary laws can be found in W. L. Fawcett's "Gold and Debt, an American Handbook of Finance," $1.75.*

Prominent works which advocate a single standard, and that gold, are J. Laurence Laughlin's "History of Bimetallism in the United States" ($2.25),* which contains a bibliography of the silver question. "The Question of Silver" (75c.), by L. R. Ehrich, containing a brief summary of legislation in the United States affecting silver; "Money" (75c.),* by James Platt, F. S. S.; "Money and its Laws" ($5),* by H. V. Poor; "Resumption and the Silver Question," a handbook, by H. V. Poor, $1;* "The Natural Law of Money," by William Brough, $1.* Other literature of this nature is furnished by the Society for Political Education, New York city, at low rates. Foremost among its books are "The Standard Dollar," by H. W. Richardson (25c.), and "The Standard Silver Dollar and the Coinage Law of 1876," by W. C. Ford (20c.).

The literature of bimetallism has been enriched during the discussion of the past two or three years by a very large number of books, tracts, and magazine articles. Only a few of the best can be mentioned here. Books and tracts in large variety are published by the American Bimetallic League, Sun building, Washington, D. C. Of these one of the best known is "Facts About Silver," a pamphlet of 82 pages, costing 10c. "The Gold Standard, an Historical Study," by Brooks Adams, furnished by the New England News Co., at 10c. per copy or 6c. by the hundred, treats the subject exhaustively from a bimetallic standpoint. This is one of the documents emanating from the Boston Bimetallic League, an organiza-

(*Continued on Page* 459.)

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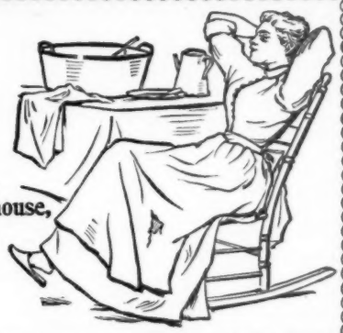

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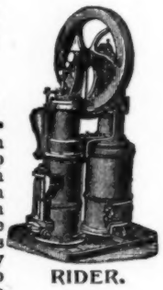

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(*Continued from Page* 458.)

tion formed in the interests of international bimetallism. Other standard works of free silver on a bimetallic basis are as follows:

Money and Monetary Problems, by J. Shield Nicholson, professor of political economy, University of Edinburg. $2.50, (Adams, and Charles Black).

The Future of Silver, by Edward Suess, professor of geology, University of Vienna, translated by Robert Stein. (Government Printing Office, Washington, D. C., pp 101, paper cover.)

The Theory of Bimetallism, by D. Barbour, financial secretary to the government of India.

Principles of Money and Coinage, by Thomas B. Buchanan. (1894, Denver.)

The Silver Question, by George M. Weston, New York, $1.50.*

Money, by George M. Weston, 8vo., cloth, $2.*

Bimetallism and Monometallism, by the Most Rev. Dr. Walsh, Archbishop of Dublin. Issued by Coin, 15 Monroe street, Chicago, at a nominal price.

Books in the foregoing list marked with an asterisk will be furnished by Orange Judd Company, 52 and 54 Lafayette Place, New York, and the most important of them can usually be found in a good city or country public library.

Silos and Silage.

Though the preservation of green forage in pits has been in vogue for many years in Europe, ensiling has been practiced in America for scarcely a score of years. A silo is any practically air-tight receptacle for the preservation of fodder, which is usually cut fine and packed into wooden bins, boxes or earth pits.

Silos are especially valuable in rainy climates where the moisture is apt to spoil the fodder and hay before it is dried, or after it is stacked in the field. In silage the stalks and coarse stems are also made palatable. In each of the States where ensiling is practiced, the experiment stations have published bulletins concerning the building of the silo, the preparation of the silage, and the best method of feeding it to stock. The Wisconsin station at Madison has issued an especially useful publication on the building of silos. The New York station at Geneva describes the filling of the silo.

One of the most useful books published on this subject is "Silos, Ensiling and Silage," a practical treatise by Prof. Manly Miles of Michigan. It costs fifty cents. Other valuable books are: "The Silo and Silage" by Prof. A. J. Cook, price twenty-five cents. "A Manual of Cattle Feeding," by Prof. H. P. Armsby, price $1.75. "Grasses and Forage Plants," by Chas. L. Flint, price $2. Phare's "Farmer's Book of Southern Grasses," price fifty cents. Orange Judd Company of 52 and 54 Lafayette Place, New York, will send any of these books, postpaid, on receipt of the price.

Silos are now generally built of lumber, as stone or brick are costly. Field corn, with both ears and fodder, is the crop most used. Cowpeas, sorghum and red clover are also ensiled. The forage is cut into very small pieces by a machine, and spread evenly in the silo. The mass is covered closely with dry hay and straw, and sometimes tarred paper is added. The silage is shoveled out in the winter for feeding. The best ration combines a small amount of hay and grain with an abundance of silage.

Other Publications.

NEW ROADS AND ROAD LAWS IN THE UNITED STATES. By Roy Stone, Vice President National League for Good Roads and U. S. Special Agent for Road Inquiry, Dept. of Agriculture. D. Van Nostrand Co., New York, 166 p., cloth.

A valuable contribution to the literature of good roads, giving special attention to new legislation looking to road improvement, the workings of such legislation, cost and methods of construction and the effects of road improvement where it has been accomplished. The book is very handsomely illustrated. Sold by Orange Judd Company; price postpaid, $1.50.

MISCELLANEOUS WORKS.

MANAGEMENT OF ABERDEEN CATTLE by Clement Stephenson, paper, p. 20. American Aberdeen-Angus Breeders' Association, Harvey, Illinois. Illustrated.

TWENTY-FIFTH ANNUAL REPORT OF THE FRUIT-GROWERS' ASSOCIATION OF ONTARIO, 1893. Ontario Department of Agriculture. Paper, p. 158.

COUNTRY ROADS for June and July. Isaac B. Potter, New York.*

The following pamphlets have been received from the Department of Agriculture, Victoria, Australia.

COURSE OF LECTURES, delivered by officers of the Department of Agriculture during 1891 in Working Men's College, Melbourne. Paper, p. 168.

REPORT BY D. WILSON, DAIRY EXPERT, OF THE RESULTS OF HIS VISIT TO EUROPE in the interests of the Dairying and Other Industries of Victoria. Paper, p. 31.

ILLUSTRATED DESCRIPTION OF THISTLES, etc., included within the provisions of the Thistle Act of 1890. Paper, colored plates. A very valuable addition to the literature of this subject.

REPORT ON RUST IN WHEAT EXPERIMENTS, 1892-3 by D. McAlpine, Government Vegetable Pathologist. Paper, p. 66.

REVISED LIST OF FRUIT TREES, etc., recommended for cultivation as suitable for marketing, canning, drying, exporting, etc. Paper, p. 125.

AGRICULTURAL EXPERIMENT STATION BULLETINS

CONNECTICUT—At New Haven. Seventeenth annual report. At Storrs. Sixth annual report.

ILLINOIS—At Champaign. Chinch bugs in Illinois, 1894; Alkaline tablets for testing the acidity of cream; Certified tests of dairy cows (B. 33).

KANSAS—At Manhattan. Rusts of grain (B. 46).

MASSACHUSETTS—At Amherst. Meteorological summary; Fertilizer analyses (B. 52). Weather (B. 65).

MONTANA—At Bozeman. Organization; Announcements (B. 1); Smuts in wheat and oats (P. B. 1). Smuts of wheat, oats and barley (B. 2).

NEW HAMPSHIRE—At Durham. Effect of food on milk (B. 20). Farmyard manures and artificial fertilizers (B. 21).

NEW JERSEY—At New Brunswick. The pear midge (B. 99).

NORTH CAROLINA—At Raleigh. Miscellaneous agricultural topics (B. 96). Some leguminous crops and their economic value (B. 98). Thread-worm of pork (B. 99). Our common insects (B. 100). Fertilizer analyses and the fertilizer control (S. B. 20 and 21). Weather (W. B. 55).

OHIO—At Wooster. Meteorological summary (B. 52). Field experiments with commercial fertilizers (B. 53). Twelfth annual report.

OREGON—At Corvallis. Notes on vegetables, fruits and pruning (B. 29). Potatoes; Roots (B. 30). Progress of entomological work; Capons and caponizing (B. 31).

SOUTH CAROLINA—At Clemson College. Experiments with tomatoes (B. 16).

TEXAS—At College Station. Effects of cotton seed and cotton-seed meal on butter, beef tallow, lard, and sheep suet (B. 29). Sixth annual report.

WISCONSIN—At Madison. Noxious weeds (B. 39).

VERMONT—At Burlington. Analysis of commercial fertilizers (B. 41).

CANADA—At Ottawa. Dairying in Ontario (S. B. '94).

At Guelph. Dairy bulletin (B. 93). The care of milk for cheese factories and creameries (B. 94).

At Toronto. Crops and stock in Ontario (B. 49).

UTAH—At Logan. Irrigation—early, late and usual (B. 27). The value of grass in the production of pork; Exercise or non-exercise of pigs (B. 28). Irrigation; amount of water to use; Relative feed-

[*Continued on Page* 461.]

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To Our Readers.

If your County or District Fair does not appear in the list below, kindly request the Secretary of the Society to forward to us the name of the place where, and the date when, it is to be held. We desire a complete list of fairs in the United States and Canada to appear in the September number of the AMERICAN AGRICULTURIST.

STATE AND PROVINCIAL FAIRS.

Canada	Toronto	Sept. 3-15
Delaware	Dover	Sept. 10-15
Illinois	Springfield	Sept. 24-29
Indiana	Indianapolis	Sept. 17-22
Indiana "Tri-State"	Evansville	
Iowa	Des Moines	Aug. 31-Sept. 7
Kansas	Topeka	Sept. 18-21
Kansas	Wichita	Oct. 2-6
Maine	Lowiston	Sept. 3-7
Michigan	Detroit	Sept. 10-21
Minnesota	Hamline	Sept. 10-15
Missouri	St. Louis	Oct. 1-6
Nebraska	Lincoln	Sept. 7-14
New Jersey Inter-State	Trenton	Sept. 24-28
New York	Syracuse	Sept. 6-13
New York and New England	Albany	Sept. 6-13
North Carolina	Raleigh	Oct 26-19
Ohio	Columbus	Sept. 3-7
Ohio Inter-State	Toledo	Aug. 27-Sept. 1
Pennsylvania	Meadville	Sept. 24 29
Pennsylvania Inter-State	Bethlehem	Sept. 18-21
Rhode Island	Providence	Sept. 17-21
South Carolina	Columbia	Nov. 12-16
South Dakota	Aberdeen	Sept. 17-21
Texas	Dallas	Oct. 20-Nov. 4
Virginia	Richmond	Oct 15-19
West Virginia	Wheeling	Sept. 3-7
Wisconsin Inter-State	La Crosse	Sept. 3-8
Wisconsin	Madison	Sept. 17-22

ALABAMA.

Montgomery	Montgomery	Nov. 6-16

ARKANSAS DISTRICT.

Bradley	Warren	Oct. 17-19

CONNECTICUT.

Fairfield	Danbury	Oct. 1-6
Hartford Cherry Park	Collinsville	Oct. 3-4
Litchfield	New Milford	Sept. 11-13
Litchfield	Watertown	Sept. 11-13
New London	Norwich	Sept. 25-27

CONNECTICUT DISTRICT.

New Haven	Guilford	Sept. 26

ILLINOIS.

Adams	Camp Point	Sept. 10-14
Boone	Belvidere	Sept. 11-14
Brown	Mt. Sterling	Aug. 6-10
Bureau	Princeton	Sept. 4-7
Carroll	Mt. Carroll	Aug. 28-31
Champaign	Champaign	Aug. 28-31
Champaign	Homer	Sept. 11-14
Champaign	Rantoul	Aug. 21-24
Coles	Charleston	Sept. 11-15
Cumberland	Greenup	Sept. 25-29
DeKalb	Sandwich	Sept. 10-14
DeWitt	Farmer City	Aug. 14-17
DeWitt	Clinton	Sept. 10-14
Douglas	Camargo	Sept. 4-7
DuPage	Wheaton	Aug. 27-31
Edgar	Paris	Sept. 3-7
Edwards	Albion	Sept. 18-21
Effingham	Watson	Sept. 18-21
Fulton	Avon	Sept. 18-21
Fulton	Canton	Sept. 18-21
Gallatin	Shawneetown	Aug 21-25
Greene	Carrollton	Sept. 18-21
Hamilton	McLeansboro	Aug. 14-17
Hancock	Carthage	Sept. 3-7
Hancock	Warsow	Aug. 28-31
Hancock	La Harpe	Aug. 27-31
Henry	Cambridge	Sept. 3-7
Henry	Kewanee	Sept. 10-14
Iroquois	Watseka	Sept. 3-7
Jasper	Newton	Sept. 18-21
Jefferson	Mt. Vernon	Sept. 11-14
Jersey	Jerseyville	Sept. 11-14
Jo Daviess	Galena	Oct. 2-5
Jo Daviess	Warren	Sept. 18-21
Kankakee	Kankakee	Sept. 11-14
Kendall	Yorkville	Sept. 3-7
Knox	Knoxville	Sept. 4-7
Lake	Libertyville	Sept. 18-21
La Salle	Mendota	July 10-13
Livingston	Fairiury	Sept. 3-7
Logan	Atlanta	Sept. 4-7
McDonough	Bushnell	Sept 15-28
McDonough	Macomb	Aug. 20-24
McHenry	Woodstock	Aug. 28-31
McLean	Saybrook	Aug. 21-24
McLean	Danvers	Sept. 18-21
Macon	Macon	Sept. 4-7
Macoupin	Carlinville	Sept. 4-7
Marion	Centralia	Sept. 4-7
Marion	Salem	Oct. 9-12
Massac	Metropolis	Sept. 4-7
Menard	Petersburg	Sept. 4-7
Mercer	Aleda	Sept. 18-21
Morgan	Jacksonville	Aug. 21-24
Moultrie	Sullivan	Aug. 28-Sept. 1
Ogle	Oregon	Sept. 11-14
Ogle	Rochelle	Sept. 18-21
Peoria	Dunlap	Sept. 12-14
Peoria	Elmwood	Aug. 21-24
Perry	Pinckneyville	Oct. 2-5
Pratt	Monticello	Aug. 21-24
Pike	Griggsville	Aug. 13-17
Pope	Golconda	Oct. 3-7
Rock Island	Joslin	Sept. 18-20
Saline	Eldorado	Aug. 7-10
Schuyler	Rushville	Aug. 13-16
Shelby	Shelbyville	Sept. 4-8
Stark	Wyoming	Aug.-31
Stephenson	Freeport	Sept. 11-14
Tazewell	Delavan	Sept. 11-14
Tazewell	Mackinaw	Sept. 3-6
Union	Jonesboro	Sept. 11-14
Union	Anna	Aug. 28-31
Vermillion	Catlin	Aug. 21-24
Vermillion	Danville	Sept. 4-7
Vermillion	Indianola	Aug. 14-17
Vermillion	Hoopeston	Aug. 27-31
Warren	Monmouth	Sept. 11-14
White	Carmi	Sept. 4-8
White	Grayville	Oct. 2-6
Whiteside	Morrison	Sept. 4-7
Will	Joliet	Sept. 10-14
Williamson	Marion	Oct. 9-12
Winnebago	Rockford	Sept. 3-7
Woodford	El Paso	Sept. 10-14

ILLINOIS DISTRICT.

Christian	Pana	Aug. 28 Sept. 1
Clinton	Centralia	Sept. 4-7
Hancock	La Harpe	Aug. 27-31
Stark	Wyoming	Aug. 28-31

INDIANA.

Benton	Boswell	Sept. 3-7
Carroll	Camden	Sept. 4-7
Carroll	Carroll	Oct. 1-5
Clark	Charlestown	Sept. 10-14
Clinton	Frankfort	Aug. 27-31
Crawford	Marengo	Sept. 3-7
Dearborn	Lawrenceburgh	Aug. 21-25
DeKalb	Waterloo	Oct. 9-13
Delaware	Muncie	Aug. 13-17
Dubois	Huntingburg	Sept. 17-22
Fountain	Covington	Sept. 10-14
Fulton	Rochester	Oct. 3-6
Gibson	Oakland City	Aug. 27 Sept. 1
Gibson	Princeton	Sept. 10-15
Grant	Marion	Sept. 4-8
Hamilton	Sheridan	Aug. 13-18
Hancock	Greenfield	Aug. 20-24
Harrison	Carydon	Aug. 27-31
Howard	Kokomo	Sept. 4-7
Howard	Poplar Grove	Oct. 1-5
Huntington	Huntington	Sept. 25-29
Huntington	Warren	Sept. 11-15
Jay	Portland	Sept. 24-28
Jefferson	Madison	Aug. 14-17
Jennings	No. Vernon	Aug. 7-10
Johnson	Franklin	Aug. 28 Sept 1
Knox	Vincennes	Oct. 8-13
Lagrange	Lagrange	Oct. 2-6
Lake	Crown Point	Sept. 11-14
Laporte	Laporte	Sept. 25-28
Marshall	Plymouth	Sept. 18-21
Miami	Macy	Sept. 12-15
Monroe	Bloomington	Sept. 11-15
Montgomery	Crawfordsville	Sept. 3-7
Newton	Morocco	Aug. 21-24
Noble	Kendallville	Sept. 25-29
Parke	Rockville	Sept. 10-14
Perry	Uniontown	Aug. 14-18
Pike	Petersburg	Sept. 3-8
Porter	Valparaiso	Sept. 18-21
Posey	New Harmony	Sept.24-28
Putnam	Bainbridge	July 30 Aug. 4
Randolph	Winchester	Oct. 2-5
Ripley	Osgood	July 31 Aug. 3
Rush	Rushville	Sept. 12-15
St. Joseph	New Carlisie	Oct. 3-5
St. Joseph	South Bend	Oct. 1-5
Scott	Scottsburgh	Aug. 28-31
Shelby	Shelbyville	Sept. 4-8
Spencer	Chrisney	Sept. 3-8
Spencer	Rockport	Aug. 21-25
Steuben	Angola	Sept. 18-21
Sullivan	Sullivan	Sept. 3-8
Switzerland	East Enterprise	Sept. 4-7
Tippecanoe	Lafayette	Sept. 3-7
Vermillion	Cayuga	Sept. 17-21
Vermillion	Newport	Sept. 25-29
Vigo	Terra Haute	Aug. 13-18
Wabash	No. Manchester	Sept. 25-28
Wabash	Wabash City	Sept. 18-21
Washington	Salem	Sept. 4-7
Wayne	Hagerstown	Aug. 7-10
Whitley	Columbia City	Oct. 2-6

INDIANA DISTRICT.

Marshall	Bourbon	Oct. 9-12
Marshall	Bremen	Sept. 25-28
Parke	Bridgeton	Aug. 27-31
Pulaski	Francisville	Sept. 4-7

IOWA.

Ada	Ida Grove	Sept. 27-29
Adair	Greenfield	Sept. 11-14
Adams	Corning	Sept. 24-28
Allamakee	Waukon	Sept. 11-14
Appanoose	Centerville	Sept. 11-14
Benton	Vinton	Sept. 11-14
Big 4 Belle Plaine	Belle Plaine	Oct. 2-5
Boone	Ogden	Sept. 18-21
Buchanan	Independence	Sept. 11-14
Buena Vista	Alta	Sept. 12-14
Butler	Allison	Sept. 10-12
Calhoun	Rockwell City	Sept, 11-14
Carroll	Carroll	Sept. 18-21
Cass	Atlantic	Sept. 10-13
Cedar	Tipton	Aug, 28-31
Cedar	West Branch	Aug. 21-24
Cerro Gordo	Mason City	Sept. 25-27
Cherokee	Marcus	Sept. 18-20
Chickasaw	New Hampton	Sept. 5-7
Clarke	Osceola	Sept. 10-13
Clayton	National	Sept. 11-12
Clinton	De Witt	Sept.18-21
Crawford	Denison	Sept. 24-27
Dallas	Adel	Sept. 18-21
Davis	Bloomfield	Sept. 18-21
Decatur	Leon	Sept. 18-21
Delaware	Manchester	Sept. 4-7
Fayette	Brush Creek	Sept. 11-14
Fayette	West Union	Sept. 4-7
Floyd	Charles City	Sept. 12-14
Franklin	Hampton	Sept, 18-21
Greene	Jefferson	Aug. 27-30
Grundy	Grundy Centre	Sept. 18-20
Guthrie	Guthrie Centre	Sept. 18-21
Hamilton	Webster	Sept. 18.21
Hancock	Britt	Sept. 18-20
Hardin	Eldora	Sept. 11-14
Harrison	Missouri Valley	Oct. 2-5
Howard	Cresco	Sept. 11-14
Humboldt	Humboldt	Sept. 25-28
Ida	Battle Creek	Sept. 27-29
Iowa	So. Amana	Sept. 11-13
Jackson	Maquoketa	Sept. 25-28
Jasper	Newton	Sept. 17-20
Jefferson	Fairfield	Sept. 11-14
Johnson	Iowa City	Aug. 27-30
Jones	Monticello	Sept. 4-7
Keokuk	Sigourney	Oct. 9-12
Kossuth	Algona	Sept. 19-21
Lee	Donnellson	Sept. 4-7
Louisa	Wapello	Aug. 21-24
Lucas	Chariton	Sept. 18-21
Madison	Winterset	Sept. 17-20
Mahaska	Oskaloosa	Aug. 28-31
Marion	Knoxville	Sept. 18-20
Mills Co. Central	Malvern	Sept. 25-27
Mitchell	Osage	Sept. 11-14
Montgomery	Red Oak	Sept. 17-21
Muscatine	Muscatine	Sept. 18-21
O'Brien	Sutherland	Sept. 18-21
Page	Clarinda	Sept. 3-7
Palo Alto	Emmetsburg	Sept. 24-26
Pocahontas Big 4	Fonda	Sept. 4-7
Poweshiek	Grinnell	Sept. 10-14
Poweshiek	Malcom	Aug. 28-31
Ringgold	Mt. Ayr	Sept. 11-14
Scott	Davenport	Sept. 10-14
Shelby	Harlan	Aug. 27-30
Story	Nevada	Sept. 12-14
Tama	Toledo	Oct. 2-5
Taylor	Bedford	Sept. 4-7
Union	Afton	Sept. 18-21
Van Buren	Keosauqua	Aug. 28-31
Wapello	Ottumwa	Aug. 20-24
Warren	Indianola	Sept. 11-14
Washington	Washington	Sept. 3-6
Wayne	Corydon	Sept. 10-14
Winnebago	Forest City	Sept. 12-14
Winneshiek	Decorah	Sept. 18-21
Wright	Clarion	Sept. 11-14

IOWA DISTRICT.

Agency	Agency	Sept. 24-27
Boone	Boone	Aug. 20-23
Clayton	Strawberry Point	Aug. 28-31
Columbus Junct.	Columbus Junct.	Aug. 28-31
Creston	Creston	Aug. 27-31
Eagle Grove	Eagle Grove	Sept. 18-21
Eastern Iowa	Winfield	Sept. 18-21
Eldon Big 4	Eldon	Sept. 3-6
Eden	Rhodes	Sept. 11-13
Henry	Winfield	Sept. 18-21
Jones	Anamosa	Aug. 21-24
Keokuk	What Cheer	Sept. 24-27
Lake Prairie	Pella	Sept. 25-28
Lenox	Lenox	Oct. 2-5
Linn	Central City	Sept. 18-21
Monona	Mapleton	Sept. 19-22
Tama	Traer	Sept. 25-27
Union	Creston	Aug. 27-31
Wapello	Agency	Aug. 28-31
Wright	Eagle Grove	Sept. 18-21

KANSAS.

Allen	Moran	Aug. 22-25
Anderson	Garnett	Sept. 4-7
Brown	Hiawatha	Sept. 4 7
Chase	Cottonwood Falls	Sept. 26-28
Clay	Clay Centre	Aug. 28-31
Coffey	Burlington	Sept. 10-14
Cowley	Winfield	Sept. 25-27
Crawford	Girard	Aug. 28-31
Finney	Garden City	Oct. 4-6
Franklin	Ottawa	Sept. 17-21
Greeley	Horace	Sept. 26-28
Jackson	Holton	Sept. 24-28
Jefferson	Oskaloosa	Oct. 10-12
Johnson	Edgerton	Sept. 25-28
Johnson	Olathe	Aug. 28-31
Linn	Mound City	Sept. 10-13
Marshall	Frankfort	Sept. 18-21
Miami	Paola	Sept. 25-28
Montgomery	Independence	Sept. 18-21
Morris	Council Grove	Sept. 25-29
Nemaha	Seneca	Sept. 11-14
Neosho	Erie	Sept. 4-7
Osage	Burlingame	Sept. 25-28
Osborne	Osborne	Sept. 11-14
Riley	Riley	Aug. 21-24
Saline	Salina	Sept. 13-16
Sedgwick	Wichita	Oct. 2-6
Wilson	Fredonia	Sept. 11-14

KANSAS DISTRICT.

Franklin	Lane	Sept. 11-14

KENTUCKY.

Adair	Columbia	Aug. 21
Anderson	Lawrenceburg	July 31 Aug. 3
Boyle	Danville	Aug. 1-3
Caldwell	Princeton	Oct. 3-6
Campbell	Alexandria	Sept. 11
Daviess	Owensboro	Oct. 2-6
Hardin	Elizabethtown	Sept. 11-14
Hart	Horse Cave	Sept.18-21
Hopkins	Madisonville	Aug. 29 Sept. 1
Jefferson	Fern Creek	Aug. 21-23
Laurel	London	Aug. 22-24
Mercer	Harrodburg	June 27-29
Ohio	Harford	Sept. 26-29
Pulaski	Somerset	Sept. 4-7
Union	Uniontown	Aug. 14-18

MAINE.

Androscoggin	Livermore Falls	Aug. 28-30
Franklin	Farmington	Sept. 25-27
Kennebec	Augusta	Sept. 3-7
Topsham	Sagadahoe	Oct. 9-11

MARYLAND.

Allegany	Cumberland	Oct. 2-5
Cecil	Elkton	Sept. 4-7
Frederick	Frederick	Oct. 9-12
Harford	Belair	Oct. 9-12
Montgomery	Norbeck	Sept. 5-7
Montgomery	Rockville	Sept. 5-7
Talbot	Easton	Sept. 18-21

MASSACHUSETTS.

Barnstable	Barnstable	Sept. 11-13
Berkshire	Great Barrington	Sept. 26-28
Berkshire	Pittsfield	Sept. 11-13
Bristol	Taunton	Sept. 25-27
Franklin	Charlemont	Sept. 13-14
Hampden	Palmer	Sept. 18-19
Middlesex	Lowell	Sept. 13-15
Nantucket	Nantucket	Sept. 5-6
Plymouth	Bridgewater	Sept. 19-21
Worcester	Athol	Oct. 2-3
Worcester	Barre	Sept. 27-28
Worcester	Fitchburg	Sept. 18-19
Worcester	Lancaster	Sept. 13-14
Worcester	Worcester	Sept. 4-7

MASSACHUSETTS DISTRICT.

Berkshire	No. Adams	Sept. 18-20
Middlesex	So. Framingham	Sept. 11-13

MICHIGAN.

Allegan	Allegan	Sept. 25-28
Barry	Hastings	Sept. 25-28
Branch	Coldwater	Sept. 24-28
Calhoun	Marshall	Sept. 25-28
Cass	Dowagiac	Oct. 2-5
Charlevoix	East Jordan	Oct. 2-4
Genesee	Fenton	Oct. 2-5
Hillsdale	Hillsdale	Oct. 1-5
Ingham	Lansing	Sept. 10-21
Kent	Grand Rapids	Sept. 24-28
Lapeer	Lapeer	Sept. 26-28
Lapeer	Hadley	Oct. 2-4
Lenawee	Adrion	Sept. 24-28
Mecosta	Big Rapids	Sept. 18-20
Kent	Grand Rapids	Sept. 18-21
Oakland	Pontiac	Oct. 2-5
Wayne	Plymouth	Sept. 25-28

MICHIGAN DISTRICT.

Ionia	Ionia	Oct. 2-5
Kent	Cedar Springs	Sept. 4-7

MINNESOTA.

Freeborn	Albert Lea	Sept. 20-22
Nobles	Worthington	Sept. 25-27
Steele	Owatonna	Sept. 6-8

MINNESOTA DISTRICT.

Olmsted	Rochester	Sept. 3-8

MISSOURI.

Atchison	Rockport	Sept. 11-14
Buchanan	St. Joseph	Sept. 10-15
Carroll	Carrollton	Aug. 28-31
Clark	Kohoka	Aug. 27-31
Dade	Lockwood	Sept. 25-28
Gasconade	Herman	Aug. 31 Sept. 1
Grundy	Trenton	Sept. 12-15
Harrison	Ridgeway	Sept. 11-14
Johnson	Holden	Aug. 28-31
Lincoln	Troy	Sept. 4-7
Macon	Macon	Aug. 24-18
Moniteau	California	Sept. 18-21
Montgomery	Rockville	Sept. 5-7
Pike	Louisiana	July 23-28
Saline	Marshall	Aug. 7-11
Scotland	Memphis	Sept. 3-7

MISSOURI DISTRICT.

Caldwell	Hamilton	Aug. 28-31
Cape Girardeau	Cape Girardeau	Oct. 2-6
Moniteau	Tipton	Aug. 14-18

NEBRASKA.

Burt	Tekamah	Sept. 19-21
Butler	David City	Sept. 19-22
Colfax	Schuyler	Sept. 19-22
Dodge	Fremont	Sept. 18-21
Hamilton	Aurora	Sept. 25-28
Lancaster	Lincoln	Sept. 7-14
Nemaha	Auburn	Sept. 18-21
Perkins	Madrid	Sept. 21-23
Polk	Osceola	Sept. 4-7
Redwillow	Indianola	Sept. 4-7
Sarpy	Papillion	Sept. 4-6
Stanton	Stanton	Sept. 24-27

NEW HAMPSHIRE.

Strafford	Rochester	Sept. 25-28

NEW JERSEY.

Burlington	Mt. Holly	Oct. 1-5
Cumberland	Bridgeton	Aug. 29-30
Somerset	Somerville	Sept. 11-13

NEW YORK.

Allegany	Angelica	Sept. 11-13
Broome	Binghampton	Sept. 6-13
Cattaraugus	Little Valley	Sept. 4-7
Cattaraugus	Randolph	Sept. 10-13
Cayuga	Auburn	Sept. 3-6
Chemung	Elmira	Sept. 17-21
Chenango	Norwich	Sept. 18-21
Clinton	Plattsburgh	Sept. 14-17
Columbia	Chatham	Sept. 4-7
Delaware	Delhi	Sept. 25-27
Dutchess	Poughkeepsie	Sept. 25-29
Erie	Hamburg	Sept. 18-21
Essex	Westport	Sept. 4-6
Franklin	Malone	Sept. 18-21
Fulton	Johnstown	Sept. 3-6
Genesee	Batavia	Sept. 24-27
Greene	Cairo	Aug. 28-30
Herkimer	Herkimer	Sept. 19-21
Jefferson	Watertown	Sept. 18-21
Lewis	Lowville	Sept. 11-14
Livingston	Geneseo	Oct. 3-5

Montgomery	Fonda	Sept. 10-13
Monroe	Rochester	Sept. 25-28
Niagara	Lockport	Sept. 20-22
Oneida	Rome	Sept. 24-28
Ontario	Canandaigua	Sept. 25-27
Orange	Newburgh	Sept. 18-21
Orleans	Albion	Sept. 20-22
Oswego	Oswego	Sept. 18-21
Otsego	Cooperstown	Sept. 24-26
Putnam	Carmel	Aug. 28-31
Queens	Mineola	Sept. 25-29
Rockland	Spring Valley	Sept. 11-14
St. Lawrence	Canton	Sept. 11-14
Saratoga	Ballston	Sept. 18-20
Schoharie	Cobleskill	Sept. 24-27
Schoharie	Schoharie	Sept. 17-20
Schuyler	Watkins	Oct. 2-4
Seneca	Waterloo	Sept. 25-27
Steuben	Bath	Sept. 25-28
Steuben	Hornellsville	Aug. 27 Sept. 1
Suffolk	Riverhead	Oct. 2-4
Sullivan	Monticello	Sept. 4-7
Tioga	Owego	Sept. 11-13
Tompkins	Dryden	Sept. 25-27
Tompkins	Ithaca	Sept. 11-14
Ulster	Ellenville	Sept. 11-13
Washington	Cambridge	Sept. 4-7
Washington	Ft. Edward	Sept. 10-14
Wayne	Lyons	Sept. 12-15
Westchester	White Plains	Sept. 24-30
Wyoming	Warsaw	Sept. 25-26
Yates	Penn Yan	Sept. 18-21

NEW YORK DISTRICT.

Cayuga	Weedsport	Sept. 25-28
Chenango	Greene	Sept. 11-14
Lapeer	Hadley	Oct. 2-4
Monroe	Brockport	Sept. 27-29
Tioga	Newark Valley	Aug. 28-30

NORTH CAROLINA.

Burke	Morganton	Oct. 2-4
Rowan	Salisbury	Oct. 2
Stutsman	Jamestown	Sept. 25-28

OHIO

Adams	West Union	Sept. 11-14
Allen	Lima	Sept. 25-28
Ashland	Ashland	Sept. 12-14
Ashtabula	Jefferson	Sept. 25-28
Athens	Athens	Sept. 11-13
Auglaize	New Bremen	Aug. 28-31
Auglaize	Wapakoneta	Oct. 9-12
Belmont	St. Clairsville	Sept. 25-27
Brown	Georgetown	Oct. 2-5
Butler	Hamilton	Oct. 1-5
Carroll	Carrollton	Sept. 18-21
Champaign	Urbana	Aug. 21-24
Clark	Springfield	Aug. 28-31
Clermont	Boston	Sept. 5-7
Columbiana	New Lisbon	Sept. 12-14
Columbiana	Wellsville	Aug. 21-24
Coshocton	Coshocton	Oct. 9-12
Crawford	Bucyrus	Sept. 25-28
Cayahoga	Chagrin Falls	Sept. 11-14
Darke	Greenville	Sept. 10-14
Defiance	Hicksville	Sept. 19-22
Delaware	Delaware	Oct. 2-5
Erie	Sandusky	Sept. 18-21
Fairfield	Lancaster	Oct. 9-13
Fayette	Washington, C. H.	Aug. 21-24
Fulton	Wauseon	Sept. 18-21
Gallia	Gallipolis	Aug. 7-10
Geanga	Burton	Sept. 17-20
Greene	Henia	Aug. 14-17
Guernsey	Washington	Sept. 25-28
Hamilton	Carthage	Aug. 14-17
Hancock	Findlay	Sept. 19-22
Hardin	Kenton	Sept. 4-7
Harrison	Cadiz	Oct. 3-5
Henry	Napoleon	Sept. 4-7
Hocking	Logan	July 19-21
Holmes	Millersburg	Sept. 25-28
Huron	Bellevue	Sept. 11-14
Huron	Norwalk	Sept. 4-7
Jefferson	Smithfield	Sept. 26-28
Lake	Painesville	Sept. 4-7
Licking	Newark	Oct. 2-5
Logan	Bellefontaine	Oct. 2-5
Lorain	Elyria	Sept. 25-28
Lucas	Toledo	Aug. 27-Sept. 1
Madison	London	Sept. 11-14
Mahoning	Canfield	Sept. 25-27
Marion	Marion	Sept. 18-21
Medina	Medina	Sept. 4-6
Meigs "Rock Springs"	Pomeroy	Sept. 4-7
Mercer	Celina	Aug. 21-24
Miami	Troy	Sept. 24-28
Monroe	Woodsfield	Sept. 4-6
Montgomery	Dayton	Aug. 28-31
Morgan	McConnellsville	Sept. 4-7
Morrow	Mt. Gilead	Oct. 2-5
Paulding	Paulding	Sept. 11-14
Perry	New Lexington	Aug. 29-31
Perry	Somerset	Oct. 17-19
Portage	Ravenna	Sept. 18-21
Preble	Eaton	Sept. 24-28
Putnam	Ottawa	Oct. 2-6
Richland	Mansfield	Sept. 25-28
Ross	Chillicothe	Aug. 7-10
Sandusky	Fremont	Sept. 25-28
Scioto	Portsmouth	Aug. 1-4
Scioto	New Boston	July 31-Aug. 3
Seneca	Fostoria	Sept. 4-7
Shelby	Sidney	Sept. 18-21
Stark	Canton	Sept. 24-28
Summit	Akron	Oct 2-5
Tri County	Ada	Aug. 21-24
Trumbull	Warren	Sept. 11-14
Tuscarawas	Uhrichsville	Sept. 25-28
Union	Marysville	Sept. 25-28
Union	Richmond	Oct. 9-12
Van Wert	Van Wert	Sept. 4-7
Vinton	McArthur	July 24-27
Warren	Franklin	Sept. 25-29
Warren	Lebanon	Sept. 18-21
Wayne	Orrville	Oct. 10-12
Wayne	Wooster	Sept. 18-21
Williams	Montpelier	Sept. 12-15
Wood	Bowling Green	Sept. 25-29
Wyandot	Upper Sandusky	Sept. 11-14

OHIO DISTRICT.

Hardin	Ada	Aug. 21-24
Huron	New London	Aug. 28-30

PENNSYLVANIA.

Allegheny	Tarentum	Aug. 28-31
Beaver	Beaver	Sept. 25-28
Beaver	Hookstown	Aug. 15-17
Berks	Kutztown	Sept. 18-21
Berks	Reading	Oct. 2-5
Bradford	Towanda	Sept. 25-28
Butler	Butler	Sept. 4-7
Cambria	Carrolltown	Sept. 25-28
Centre	Centre Hall	Sept. 17 22
Chester	Oxford	Sept. 26-28
Crawford	Cambridgeboro	Sept. 18-21
Crawford	Cochranton	Oct. 2-4
Crawford	Conneautville	Sept. 4-7
Crawford	Meadville	Sept. 24-29
Crawford	Titusville	Sept. 4-7
Cumberland	Carlisle	Sept. 25-28
Erie	Corry	Sept. 11-14
Erie	Wattsburg	Sept. 4-7
Fayette	Uniontown	Aug. 21-24
Greene	Carmichaels	Sept. 27-28
Indiana	Indiana	Sept. 10-14
Jefferson	Brookville	Sept. 25-28
Lycoming	Hughesville	Sept. 26-29
Mercer	Stoneboro	Sept. 4-7
Mifflin	Lewistown	Dec. 4-6
Monroe	Strandsburg	Sept. 4-8
Northampton	Nazareth	Oct. 2-5
Perry	Newport	Sept. 18-21
Schuylkill	Laveile	Sept. 18-21
Susquehanna	Harford	Sept. 26-27
Susquehanna	Montrose	Oct. 2-3
Tioga	Westfield	Sept. 17-21
Union "Brook Park"	Lewisburg	Sept. 25-28
Warren	Warren	Aug. 28-31
Washington	Washington	Aug. 28-31
Wayne	Honesdale	Sept. 25-27
Wyoming	Tunkhannock	Sept. 19-21

PENNSYLVANIA DISTRICT.

Armstrong	Parker	Sept. 11-14
Cambria	Ebensburg	Aug. 28-31
Tioga	Mansfield	Sept. 25-28
Washington	Burgettstown	Oct. 2-4
York	Hanover	Sept. 11-14

RHODE ISLAND.

Providence	Woonsocket	Sept. 11-13

SOUTH CAROLINA.

Fairfield	Winnsboro	Oct. 10-12
Newberry	Pomaria	Nov. 12-16

SOUTH DAKOTA.

Brown	Aberdeen	Sept. 17-21
Clay	Vermillion	Aug. 13

SOUTH DAKOTA DISTRICT.

Bon Homme	Scotland	Sept. 19-22

TENNESSEE.

Henry	Paris	Oct. 23-26
London	London	Sept. 25-28
Maury	Columbia	Oct. 2-4

VERMONT.

Franklin	Sheldon Junction	Sept. 5-7
Rutland	Rutland	Oct. 2-4
Windsor	Woodstock	Sept. 25-27
Windham	Brattleboro	Sept. 26-27

VIRGINIA.

Botetourt	Fincastle	Oct. 2-5
Northumberland	Heathsville	Sept. 26-28
Shenandoah	Woodstock	Oct. 2-5

VIRGINIA DISTRICT.

Frederick	Winchester	Sept. 11-14
Spotsylvania	Fredericksburg	Sept. 11-13

WEST VIRGINIA.

Greenbrier	Lewisburg	Sept. 4-7
Harrison	Clarksburg	Sept. 25-27
Marshall	Moundsville	Aug. 28-30
Ritchie	Pennsboro	Sept. 11-14
Tyler	Middlebourne	Aug. 28-30
Wetzel	New Martinsville	Aug. 21-24

WISCONSIN.

Barron	Chetek	Sept. 5-7
Blakes Prairie	Bloomington	Sept. 5-7
Boscobel	Boscobel	Sept. 12-14
Calumet	Chilton	Sept. 25-28
Crawford	Seneca	Sept. 25-27
Cumberland	Cumberland	Sept. 18-20
Dodge	Beaver Dam	Sept. 25-28
Dunn	Menomonie	Sept. 11-15
Grant	Lancaster	Sept. 19-21
Green	Monroe	Sept. 12-15
Iowa	Dodgeville	Aug. 29-31
Jackson	Black River Falls	Sept. 11-14
Jefferson	Jefferson	Oct. 2-5
Kewannee	Kewannee	Sept. 5-8
Lafayette	Darlington	Aug. 28-31
Manitowoc	Manitowoc	Sept. 12-15
Marathon	Wausau	Sept. 13-15
New London	New London	Sept. 18-21
Outagamie	Hortonville	Sept. 26-28
Ozaukee	Cedarburg	Sept. 26-28
Pepin	Durand	Sept. 26-28
Pierce	Ellsworth	Sept. 19-21
Richland	Richland Center	Sept. 25-28
Rock	Janesville	Sept. 11-14
St. Croix	Hudson	Sept. 5-8
Sauk	Baraboo	Sept. 25-28
Seymour	Seymour	Sept. 24-26
Southwestern	Mineral Point	Sept. 4-7
Taylor	Medford	Sept. 11-13
Trempealeau	Galesville	Aug. 27-30

WISCONSIN DISTRICT.

Northeastern	Green Bay	Sept. 18-21
Oshkosh	Oshkosh	Sept. 10-14

ONTARIO.

Brant	Burford	Oct. 11-12
Brant	Paris	Oct. 2-3
Brant	Brantford	Sept. 26-28
Bruce	Paisley	Sept. 25-26
Bruce	Walkerton	Oct. 2-4
Carleton	Ottawa	Sept. 21-29
Durham	Boumanville	Sept. 21-22
Elgin	Ridgetown	Oct. 8-10
Frontenac	Kingston	Sept. 17-21
Haldimand	Cayuga	Sept. 25-26
Hastings	Belleville	Sept. 18-20
Huron	Goderich	Sept. 25-26
Kent	Chatham	Oct. 2-4
Kingston	Kingston	Sept. 17-21
Lanark	Almonte	Oct. 3-5
Lanark	Perth	Sept. 18-20
Lincoln	St. Catherines	Sept. 24-26
Norfolk	Simcoe	Oct. 16-18
Norfolk	Tilsonburg	Oct. 9-10
Ontario	Whitby	Sept. 18-20
Ontario	Cannington	Sept 28-29
Ottawa	Ottawa	Sept. 21-29
Oxford	Otterville	Oct. 5-6
Oxford	Woodstock	Sept. 25-26
Peel	Brampton	Sept. 27-28
Perth	Stratford	Sept. 27-28
E. Peterboro	Norwood	Oct. 9-10
C. Peterboro	Peterboro	Sept. 24-26
Prince Edward	Picton	Oct. 3-4
Queens Park	London	Sept. 13-22
Renfrew	Beachburg	Oct. 4-5
Renfrew	Renfrew	Sept. 18-19
Simcoe	Cookstown	Oct. 2-3
Simcoe	Stayner	Oct. 2-4
Simcoe	Collingwood	Sept 25-28
Toronto	Toronto	Sept. 3-15
Victoria	Lindsay	Sept. 26-28
Waterloo	Wellesley	Sept. 18-19
Wellington	Elora	Oct. 4-5
Wellington	Arthur	Oct. 2-3
Wellington	Guelph	Sept. 18-20
York	Markham	Oct. 3-5
York	Woodbridge	Oct. 16-17

QUEBEC.

Montcalm	St. Jacques del Achigan	Sept. 26-27
Sherbrooke	Sherbrooke	Sept. 1-8
Stanstead	Stanstead	Aug. 22-23

OUR LIBRARY CORNER.

(*Continued from Page* 459.)

ing values of timothy, lucern and wild hay (B. 29). Narrow vs. Wide nutritive rations for horses (B. 30).

UNITED STATES DEPARTMENT OF AGRICULTURE, Washington, D. C., publishes the following:

ROAD MATERIALS and Transportation Rates in certain States West of the Mississippi River. (B. 5, Office of Road Inquiry.) Condensed reports received from railway managers regarding the supply of road materials—accessibility, transportation rates, etc., along their respective lines.

Contributions from the U. S. National Herbarium, Vol. III., No. 2. Pp. 91-132. By John M. Coulter. A preliminary revision of the North American species of Cactus, Anhalonium, and Lophophora.

ROADS, ROAD MATERIALS, and Freight Rates in certain States North of the Ohio River. (B. 6, Office of Road Inquiry. A compilation of information furnished by various railway companies regarding the supply of road materials along their respective roads.

EARTH ROADS: Hints on Their Construction and Repair. By Roy Stone. Pp. 20. (B. 8, Office of Road Inquiry.) A compilation of information and suggestions regarding the best method of constructing a common highway without gravel or stone.

REPORT OF THE STATISTICIAN. Pp. 295-394. (R. 116, Division of Statistics.) Crop report for June; tariff rates on principal cereals and flour in European countries; notes on foreign agriculture: notes from U. S. consular officers; the climate of Mexico; Mexican railways; transportation rates. Also a synopsis of this report, containing estimates of the acreage of cotton, wheat, oats, rye, rice and clover, and a report on the condition of these crops and of fruits.

CANAIGRE. (Circular No. 25, Office of Experiment Stations.) Contains a description of canaigre, together with information as to its tannin content, the regions best suited to its growth, its culture and preparation for market, and the supply and value of the crop.

THE RUSSIAN THISTLE; Its History as a Weed in the United States, with an Account of the Means Available for Its Eradication. By Lyster Hoxie Dewey. (B. 15, Division of Botany.)

REPORT OF WRECKS which Occurred on the Great Lakes from December 17, 1885 to November 15, 1893. "Miscellaneous Report of the Weather Bureau).

WRECK CHART OF THE GREAT LAKES from 1886 to 1893. (Size 24 by 33 inches.) Shows location of wrecks occasioned through founderings, gales of wind, fogs and stormy weather conditions during the period named.

SCHOOL CHART. Maps of December 14-16, 1893. Size 52½ by 56 inches. (Published by the Weather Bureau.) For use of schools, designed to show the movement of areas of high and low temperature, and the method of forecasting the same.

EXPERIMENT STATION RECORD, Vol. V., No. 10. Pp. 941-1040. Editorial notes; A review of recent work on dairying; Abstracts of publications of the Agricultural Experiment Stations, of the U. S. Department of Agriculture, and of reports of foreign investigations; titles of articles in recent foreign publications; etc.

HUNGARIAN BROME-GRASS. (Circular No. 7, Division of Botany.) A description of the grass, with special reference to its history, yield, and value as a forage crop, in warm or dry climates.

REGULATIONS Governing Transactions with the U. S. Department of Agriculture, together with Extracts from the Revised Statutes, Decisions of Comptrollers, etc. (Bulletin of the Division of Accounts.)

FERTILIZERS FOR COTTON. By J. M. McBryde, Ph. D. (Farmers' Bulletin No. 14.) Reprinted.

CHARTS OF THE WEATHER BUREAU. (Size 19 by 24 inches.) Semi-daily Weather Map, showing weather conditions throughout the United States and giving forecasts of probable changes. Weekly Weather Crop Bulletin reporting temperature and rainfall, with special reference to their effects on crops.

PEACH YELLOWS AND PEACH ROSETTE. By Erwin F. Smith, special agent. (Farmers' Bulletin No. 17.) Contains information regarding the distribution, distinguishing characters, and preventive measures for the treatment of peach yellows and peach rosette.

MONTHLY WEATHER REVIEW. Pp. 149-192, charts 5. (Subscription price 50 cents per annum.)

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MATTERS OF BUSINESS.

Acreage and Condition of Crops.

The Averages of All Crops, as reported to the Department of Agriculture, are: Corn, 95; winter wheat, 83.9; spring wheat, 68.4; all wheat, 79.3; oats, 77.7; winter rye, 93.9; spring rye, 81.7; all rye, 87; barley, 76.8; rice, 91.1; potatoes, 92.3; tobacco, 81; cotton, 89.6.

The Winter Wheat Average is 83.9 against 83.2 in June, and 77.7 in July, 1893. The percentages of the principal States are as follows: New York, 97; Pennsylvania, 98; Kentucky, 88; Ohio, 96; Michigan, 92; Indiana, 95; Illinois, 94; Missouri, 91; Kansas, 56; California, 51; Oregon, 97; Washington, 91. The condition of spring wheat is 68.4 against 88 in June, and 74.1 in July, 1893. The fall since last report is nearly 20 points. State averages are: Minnesota, 74; Wisconsin, 95; Iowa, 78; Kansas, 69; Nebraska, 40; South Dakota, 44; North Dakota, 68; Washington, 85; Oregon, 98. The average condition of both winter and spring wheat, or all wheat for the country, is 79.3 per cent.

The Preliminary Average of Corn shows 106 per cent. as compared with the acreage of 1893, being an increase in round numbers of 4,000,000 acres, or 76,000,000 acres against 72,000,000 last year. The averages of the principal States are: Ohio, 101; Michigan, 102; Indiana, 103; Illinois, 104; Wisconsin, 102; Minnesota, 116; Iowa, 108; Missouri, 109; Kansas, 110; Nebraska, 118; Tennessee, 104; Texas, 105; Kentucky, 102. The average condition of corn is 95 against 93.2 last July. The averages in the principal States are: Ohio, 92; Indiana, 96; Illinois, 99; Iowa, 100; Missouri, 101; Kansas, 96; Nebraska, 96; Texas, 94; Kentucky, 90; Tennessee, 89; Michigan, 93.

Winter Rye averaged 93.9 per cent.; spring rye 81.7, and all rye 87. Last year, July 1, winter rye averaged 83.8, spring 89, and all rye 85.3. The condition has fallen six points since June 1.

Barley Has Declined about six points since June 1, standing now at 76.8. Last year the condition was 88.8.

The Acreage of Potatoes is 105.1 per cent. of last year. The condition for the whole country is 92.3 against 94.8 and 90 in 1893 and 1892 respectively. This is nearly two points below the average for July the past ten years. In the States of largest production, New York, Pennsylvania, Michigan and Wisconsin, the condition is about the average, standing at 94, 95, 98 and 97 respectively.

Apples for the Whole Country average 47.6 per cent., indicating a small crop. In New England, New York, Michigan, Wisconsin, Iowa, Kansas, the mountains and Pacific States the conditions indicate a crop ranging from fair to good. A few States may have half a crop, while in the remainder the crop will be nearly or quite a failure.

Peaches Average about 24.3. Fair crops are possible in New Jersey and Connecticut, in Michigan are better, while in California the crop is in fine condition.

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The Coiled Spring Hustler.—This is the suggestive name which the Page Woven Wire Fence Co., Adrian, Mich., gives to a little periodical devoted to the excellent fence they manufacture. It is a bright, sparkling little sheet, and does its "hustling" in a characteristic way. Sample copies will be mailed free to readers of the AMERICAN AGRICULTURIST who may apply for the same.

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A Musical Education.—Very many of the young people in the homes where the AMERICAN AGRICULTURIST is a regular visitor, desire a musical education, either for their own pleasure or for teaching purposes. To such we heartily commend the New England Conservatory of Boston as being one of the best institutions of its class. It is not a money-making affair; it could not exist on the fees it receives from pupils, but is liberally endowed, and is, from time to time, in receipt of generous aid from persons of means who desire to render an artistic education a possibility to the masses. It is comprehensive in its scope and modest in its charges, and its standing is of the highest, comparing favorably with the best European institutions of its kind.

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